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ANTHROPOLOGICAL INSTITUTE  
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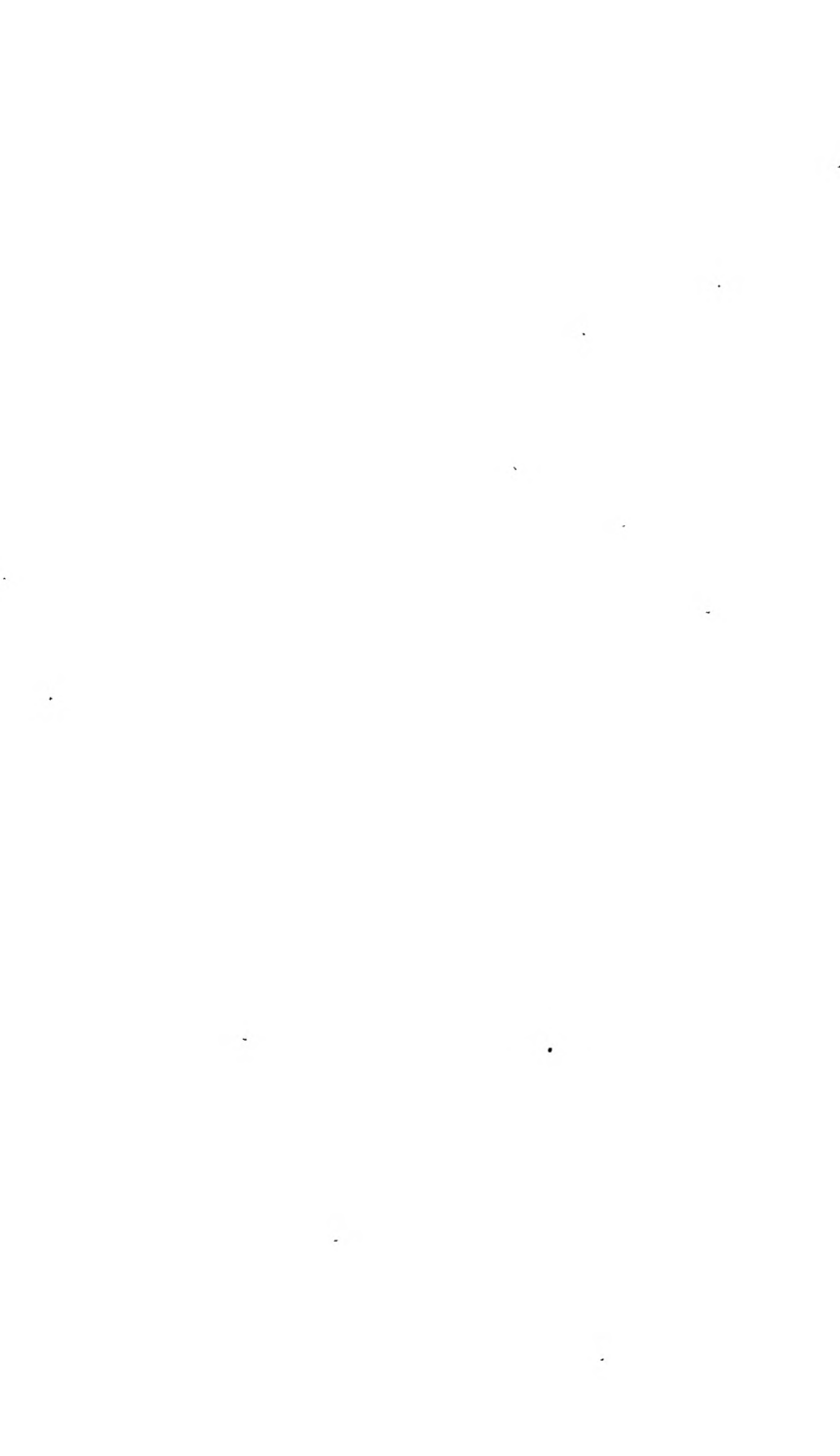
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# CORRIGENDA.

The following misprints should be corrected :—

- Page 27, line 6, from bottom of page, for "*Jeyasu*" read "*Ieyasu*."  
 „ 28, line 1, for "*Igumo*" read "*Izumo*."  
 „ 28, line 7, from bottom of page, for "*Jeyau*" read "*Ieyasu*."  
 „ 34, foot, for "*Dr.*" read "*J.*"  
 „ 37, note 4, for "*three-class systems,*" read "*three class-systems.*"  
 „ 43, note, for "*Tenant's,*" read "*Tennant's.*"  
 „ 44, line 27, for "*Opali,*" read "*Opala.*"  
 „ 45, line 21, *qy. dele* "*to.*"  
 „ 49, line 3, from bottom of page, for "*f B a,*" read "*f B b' ;*" and for "*f B a' ,*" read "*f B b' .*"  
 „ 50, line 3 from bottom, for "*Bidneli,*" read "*Bidweli.*"  
 „ 50, note 2, for "*Bidnelli,*" read "*Bidwelli.*"  
 „ 55, line 6 from bottom, for "*has been,*" read "*was.*"  
 „ 56, note 1, for "*australasianus,*" read "*australasianus.*"  
 „ 65, note 2, for "*Dantum,*" read "*Dantun.*"  
 „ 67, note 1, for "*Dr.,*" read "*D.*"  
 „ 68, line 23, for "*Nakongok,*" read "*Nokongok.*"
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FEBRUARY 14TH, 1888.

FRANCIS GALTON, Esq., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The following presents received since the last meeting were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From the GOVERNMENT OF NEW ZEALAND.—Statistics of the Colony of New Zealand for the year 1886.

From the AUTHOR.—A Manual of the Andamanese Languages. By M. V. Portman, M.R.A.S., &c.

— The Catawba Language. By A. F. Chamberlain, B.A.

— Recherches Anthropologiques dans le Caucase. Par Ernest Chantre.

— Présentation de quatre Boshimans vivants. Par M. Topinard.

— Crane trépané sur le vivant et après la mort. Par M. Topinard.

— L'Anthropologie Criminelle. Par M. Topinard.

— Mensuration des crânes de la Caverne de Beaumes-Chaudes Par P. Topinard.

- From the AUTHOR.—*Mémoires d'Archéologie et d'Ethnographie Américaines.* Par le Dr. E. T. Hamy, liv. 1-3.
- Ueber das Recht der Papuas auf Neu-Guinea. Von Prof. Dr. J. Kohler.
- Ueber das Recht der Goajiroidianer. Von Prof. Dr. J. Kohler.
- Ueber das Recht der Anstralneger. Von Prof. Dr. J. Kohler.
- Essai d'une classification des instruments quaternaires en silex, et considérations préliminaires sur l'existence de l'homme à l'époque tertiaire dans les environs de Spiennes. Par M. Alph. Cels.
- From the ESSEX FIELD CLUB.—*The Essex Naturalist.* No. 12. December, 1887.
- From the ROYAL ARCHÆOLOGICAL INSTITUTE.—*The Archæological Journal.* No. 176.
- From the ROYAL SCOTTISH GEOGRAPHICAL SOCIETY.—*The Scottish Geographical Magazine.* Vol. iv. No. 2.
- From the DEUTSCHE GESELLSCHAFT FÜR ANTHROPOLOGIE, ETHNOLOGIE, UND URGESCHICHTE.—*Archiv für Anthropologie.* Band xvii. 3.
- From the KONGL. VITTERHETS HISTORIE OCH ANTIQVITETS AKADEMIEN.—*Antiqvarisk Tidskrift för Sverige.* Del. x. 3, 4.
- From the ARCHEOLOGICAL SOCIETY OF AGRAM.—*Viestnik hrvatskoga Arkeologičkoga Društva.* Godina x. Br. 1.
- From the MUSEUM.—*Bericht über die Verwaltung der königlichen Sammlungen für Kunst und Wissenschaft zu Dresden in den Jahren 1882 und 1883, 1884 und 1885.*
- From the SOCIETY.—*Proceedings of the Royal Geographical Society.* Vol. x. No. 2. February, 1888.
- *Proceedings of the Society of Antiquaries of London.* Vol. xi. No. 4.
- *Journal of the Society of Arts.* Nos. 1834-1837.
- *Proceedings of the Society of Biblical Archaeology.* Vol. x. Part 3.
- *Journal and Proceedings of the Royal Society of New South Wales for 1886.*
- *Bulletins de la Société d'Anthropologie de Paris.* 1887 Fas. 3.
- *Mémoires de la Société d'Émulation d'Abbeville.* Vol. iv.
- *Bulletin de la Société de Borda, Dax.* 1887. 4.
- *Bulletin de la Société Impériale des Naturalistes de Moscon.* 1887. No. 4.
- *Mittheilungen der Anthropologischen Gesellschaft in Wien.* Band xv. Heft 4. Band xvii. Heft 3 und 4.
- From the EDITOR.—*Nature.* Nos. 950-954.
- *Science.* Nos. 256-260.
- *The Photographic Times.* Nos. 328-332.
- *Scientific News.* No. 1.
- *Revue d'Ethnographie.* Tome vi. No. 4.

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The following paper was read by the author :—

DESCRIPTION of TWO SKELETONS of AKKAS, a PYGMY RACE from  
CENTRAL AFRICA.

By WILLIAM HENRY FLOWER, C.B., LL.D., F.R.S., &c., Director  
of the Natural History Departments of the British Museum.

[WITH PLATES, I, II, AND III.]

SINCE the race of pygmy Negroes called Akkas<sup>1</sup>, inhabiting the Monbotto country of Central Africa, were discovered by Schweinfurth, in the year 1870, they have received considerable attention from various travellers and anthropologists, and general descriptions and measurements of several living individuals have been published, but no account of their osteological characters has hitherto been given. Nor have any specimens been submitted to careful anatomical examination. The two skeletons recently sent to the British Museum by Dr. Emin Pasha are, therefore, of much interest, and I trust that the following description of their more important features will be acceptable to the Institute.

The skeletons are, unfortunately, very imperfect, but still most of the principal bones are present, including the skulls of both, and the pelvis of one. They were both obtained by Emin Pasha in Monbotto, and are described by him as "a full grown male," and "a very old female."

The skeleton of the male consists of the skull, with nearly perfect teeth; the vertebral column, with the exception of the five upper cervical vertebrae; most of the ribs; both scapulae (the left imperfect); all the principal bones of the limbs, but the clavicles and innominate bones are wanting. Part of the base of the cranium, including the condyles and the basion, has been unfortunately cut away. The condition of the bones and teeth shows that it belongs to a full-grown, though not a quite adult person. The basi-cranial suture is closed, and consolidation of the sagittal and lambdoidal sutures has commenced rather prematurely in comparison with the other indications of age. The third molars are all fully in place, though quite unworn, and the surfaces of the other molars are only slightly abraded. The epiphyses of the upper end of the humerus and of the lower end of the femur have but recently united to the shaft, the line of junction being perfectly distinct, and the epiphysis of the posterior border of the scapula is detached.

<sup>1</sup> For a general account of our present knowledge of the Akkas, and their supposed identity with the Pygmies of Homer and Herodotus, and for references to the literature of the race, see "Les Pygmées," by A. de Quatrefages, Paris, 1887, p. 253, *et seq.*

The female skeleton wants several of the vertebræ, and many of the bones of the hands and feet, but all the large bones of the limbs (except the right femur) and the pelvis are present. It is evidently from a considerably older individual than the other; all traces of the epiphysial junction of the long bones having disappeared; and of the molar teeth, some have been lost through age and the others are much worn. The vertebræ also present evidences of senile change in the flattening of their bodies, and the development of bony outgrowths from their margins. It is, however, curious that no commencement of consolidation of the sutures between the frontal, parietal, and occipital bones has taken place, so that, judging by this character alone, the skull would have been taken to be younger than that of the male.

The skeleton of the female, being the most perfect, has been carefully articulated, with due allowance for the missing vertebræ and for the intervertebral substances. Its height from the vertex to the ground is exactly four feet or 1,218 mm. Half an inch more might be added for the thickness of the sole of the foot and the scalp to make up the full height of the living person. It is curious in reference to the discussion<sup>1</sup> as to the calculation of the stature from the length of the femur, that the old estimate of the length of that bone being to the height as 275 to 1,000 which was used in the memoirs on the natives of the Andaman Islands,<sup>2</sup> gives a height exactly that of the articulated skeleton. Dr. Beddow's sliding scale, which allows for a different proportion in the length of the limbs according to the height, although it may be applicable to different individuals of a given race, is quite at fault when applied to these little people, which appear not to have the proportions of dwarfs of large races, but rather those of people of medium or even full stature. This proposition is, I think, fully borne out by the following measurements:—

	Millimetres.
Height of skeleton from vertex to ground .. ..	1,218
Height of head (vertical height between vertex and chin) ..	160
From symphysis pubis to ground .. ..	620
From top of trochanter major to ground .. ..	620
Leg articulated, from head of femur to heel .. ..	640
Vertebral column, from upper margin of atlas to lower margin of last lumbar vertebra, measured along anterior surface ..	395
Vertebral column, from upper margin of atlas to end of coccyx	505

<sup>1</sup> See Dr. Beddow "On the Stature of the Older Races of England as estimated from the Long Bones," *Journ. Anthropol. Inst.*, vol. xvii, No. 3, p. 202 (February, 1888).

<sup>2</sup> "On the Osteology and Affinities of the Natives of the Andaman Islands," *Journ. Anthropol. Inst.*, vol. ix, p. 108 (1878); and "Additional Observations on the Osteology of the Natives of the Andaman Islands," *Journ. Anthropol. Inst.*, vol. xiv, p. 115 (1884).

	Millimetres.
From the spine of the seventh cervical to the lower end of sacrum (posteriorly in straight line, "the trunk" of Topinard) ..	380
Length of left foot (complete) .. .. .	158
Length of upper limb <sup>1</sup> .. .. .	550

The proportion of the height of the head to the whole height is therefore  $\frac{1}{7}\frac{9}{10}$ , or as 131 to 1,000. The length of the lower limb (from the trochanter or the pubis) is to the height as 509 to 1,000; the upper limb as 451 to 1,000. On comparing these proportions with those of the elaborate tables given in Topinard's "*Anthropologie Générale*," it will be seen that the head is smaller than in nearly all races there given (pp. 1070 and 1071), but almost exactly corresponding to the French (132), who seem to have been measured in larger numbers and more accurately than any other race. The limbs (especially the arms) correspond most closely with those of the Negroes, of which such numerous measurements were made during the American war; and the proportions of which to the height are given as follows:—Upper, 452; lower, from pubis to ground, 518 to 1000.

Judging by the individual bones of which the measurements will be given further on, the skeleton of the male was slightly inferior in size to that of the female. It is, I believe, the smallest human skeleton on record, excluding abnormal dwarfs. But as will be seen by the appendix, the living female Akka measured by Emin Pasha, was of still smaller dimensions, her height being only 1,164 mm., or 3 feet 9·8 inches.

In the description of the bones, I propose to follow generally the order and method used in the account of the osteological characters of the somewhat kindred pygmy race, the Andamanese, with which the Akkas form interesting subjects for comparison. There is, however, this great difference to be noted in the two series. That of the Andamanese skeletons of both sexes was sufficiently numerous to eliminate individual peculiarities, and to give averages on which to found reliable race characters, while the Akkas, being only two in number altogether, however interesting in themselves, must afford quite insufficient data for such a purpose. It has, therefore, not been considered necessary to give all the measurements in such detail as in the former communications.

The two skulls resemble each other in their most important general characteristics, although presenting certain well marked individual peculiarities, as will be noticed in the description of the different regions, and seen in the figures.

<sup>1</sup> As the terminal phalanges of the hand are wanting, this measurement is only approximative.

The cranial capacity of the male is 1,102 cubic centimetres, that of the female only 1,072.<sup>1</sup> The only other people who approach this smallness of capacity are the Andamanese, the Bushmen, and the Veddahs of Ceylon. The average capacity of the Andamanese male is 1,244, the smallest being 1,150; of the female, 1,128, the smallest being 1,025. The Akkas thus show a great diminution, not only on the average male and female Andamanese, but the male is even below the smallest male of that race measured. The average of two male Bushmen in the Museum of the Royal College of Surgeons is 1,330; of four females, 1,214, the smallest being 1,075. The average of five male Veddahs is 1,259. A female of this race measures only 950, being one of the smallest normal adult skulls on record.<sup>2</sup>

The horizontal circumference of the skull of the male is 466 mm.; that of the female, 462. The average circumference of the male Andamanese is 481; that of the female exactly the same as the Akka woman, *i.e.*, 462.

In measuring the length, there is, fortunately, no occasion to enter into the discussion of the relative merits of the glabella-occipital and ophtryo-occipital diameters, as the absence of all projection of the glabella makes the two coincide. The length given is therefore the maximum length, and will at the same time coincide with the ophtryo-occipital length recorded in former communications. It is curious that the length of the cranium of the male, 168 mm., is scarcely more than half a millimetre more than the average (167·4) of twenty-one Andamanese males. The female is 163 against the Andamanese 160·8. The maximum parietal breadths of the male and female Akka skulls are 125 and 127 respectively, against 135·8 and 133·2 of the Andamanese of the two sexes, showing a considerable reduction in this dimension. This is also expressed by the cranial index, which is 74·4 in the male, and 77·9 in the female Akka; instead of 81·1 in the male, and 82·8 in the female Andamanese.

The absence of basion in the male skull makes it impossible to measure the vertical height in the usual way, but in the female this dimension is 124 mm., slightly lower than in the Andamanese of corresponding sex (125·3), and giving a height index of 76·1.

The basi-nasal length for the same reason cannot be accurately measured in the male, but it may fairly be estimated for the purpose of comparison at 92 mm., which is the actual length in

<sup>1</sup> Measured by Mr. Oldfield Thomas with shot by a modification of Broca's method.

<sup>2</sup> "Catalogue of the Specimens of Osteology and Dentition of Vertebrated Animals in the Museum of the Royal College of Surgeons," Part I, "Man," by W. H. Flower (1879)

the female skull. In the Andamanese this length was 94.6 in the male and 90.3 in the female.

The general form of both crania as seen in the *norma verticalis* (see Plate III) presents a more regular oval than in the Andamanese, the parietal eminences being not only less prominent but placed further forwards, with a fairly elongated, and gradually narrowing occipital region behind them.

The profile views of the two crania (Plate I) show considerable individual differences. In the male the line of the forehead rises vertically from the glabella, then curves gently backwards to the bregma, behind which it rises slightly to the posterior end of the anterior third of the sagittal suture, from which point it descends rapidly to the lambda, beyond which the occipital region projects distinctly backwards before curving round to the under surface of the skull. The greater development of the occipital region is a marked characteristic of this skull as compared with the Andamanese. The female (contrary to the usual characteristics of the sex) has a forehead sloping more gradually from the glabella to the bregma, and also a more elevated mid-parietal region, and rather less occipital projection.

The general surface of both crania is smooth and the muscular ridges are little pronounced. The glabella and supra-orbital elevations, as well as the inion and the occipital ridges are all feebly developed. The line of the upper attachment of the temporal muscle is, however, very distinct in both skulls. The mastoid processes are moderate—rather longer in the female, and broader and flatter in the male.

The sutures are very simple in the male (No. 3, Broca's scale), but both lambdoid and coronal present a fair degree of complexity (No. 4) in the female skull. Small Wormian bones are present in both. There is no trace of metopism in either. In the region of the pterion in the male, the squamosal articulates with the frontal on the right side for a space of 4 mm. On the left side it is separated from it by an equal space. In the female the squamosal and frontal are united on the right side for as much as 11 mm., and the left for 10 mm. There are no epipteric bones in either. The male is distinctly phænozygous, but the female is not.

The face in both is short and broad with a considerable degree of prognathism. Unfortunately the exact amount of this cannot be indicated in the manner used in previous communications,<sup>1</sup> owing to the absence of the basion in the male and the defective condition of the alveolar margin in the female skull; but it is

<sup>1</sup> See especially "On the Cranial Characters of the Natives of the Fiji Islands," *Journ. Anthropol. Inst.*, vol. x, p. 162 (1880).

easy to give a close approximation in both cases. In the male the basi-alveolar line is 100 mm., and the basi-nasal being taken at 92 gives the very high gnathic index of 1,087. In the female with the same basi-nasal length the basi-alveolar was probably not more than 96, and the resulting index is thus 1,043. The mean gnathic index of the two skulls, 1,065, is therefore much higher than that of the Andamanese, in which race the mean of both sexes is only 1,011, and even higher than that of the average of African Negroes of various tribes (viz., 1,044).<sup>1</sup>

The general form of the orbits and of the malar bones is alike in both sexes, only showing the usual sexual characters of increased thickness of the outer margin and more stout conformation of the malar in the male skull. The orbital dimensions and indices in both cases are exactly the same, the latter being 82.9, or within the microseme division of Broca. In the Andamanese the orbits are much higher and rounder in form, the indices being 90.4 and 91.4 respectively in the two sexes, and therefore entering the microseme division. The African Negroes in general are intermediate in this character, having an index of 86.3.

The forward projection of the malar bones, determined according to the method of Oldfield Thomas,<sup>2</sup> gives an index of 107.9 in the male, and the practically identical one of 108.0 in the female, which is again intermediate between that of the Andamanese (107.5) and that of the West African Negro (108.5).

The nasal region presents strongly marked individual characters, especially in the form of the nasal bones, which, in the male skull, show a very normal Negro conformation, and measure in the middle line 23 mm. in length, while in the female they are remarkably reduced, measuring only 12 mm. This, as well as the smaller nasal width in the female gives a very different form to the nasal aperture. They are both strongly platyrrhine, the nasal index in the male being as high as 63.4, in the female 55.3. In this character they depart widely from the mesorrhine Andamanese, and resemble some of the extreme types of African Negroes and Bushmen. In both the lower margin of the aperture is fairly defined, and the spine moderately developed.

The palatal index of the male, taken by the method recommended in the paper on the cranial characters of the natives of

<sup>1</sup> W. H. Flower, "Catalogue of Specimens of Osteology and Dentition of Vertebrate Animals in the Museum of the Royal College of Surgeons," Part I, "Man" (1879).

<sup>2</sup> "Journ. Anthropol. Inst.," vol. xiv, p. 333.

the Fiji Islands<sup>1</sup> is exceptionally low, viz., 103·8, the general form of the palate being remarkably hypsiloid. The form of the palate of the female appears to have been similar, but owing to its defective condition exact measurements cannot be given.

The mandibles are much alike in general conformation, and of a generally low type. As compared with a well-formed mandible of a European, the horizontal ramus is shallow, and of nearly even height throughout, the mental prominence little developed, the ascending ramus low, especially in the female, and the sigmoid notch shallow.

The teeth of the male are in a very perfect condition, and are of large size. The dental length (upper molars and premolars) is 45 mm., which in comparison with the small general size of the skull as indicated in the basi-nasal length, gives a *dental index* of 48·9, larger consequently than the average of any known race, although exceeded by some individuals of the megadont group.<sup>2</sup>

Taking all the characters of the skulls together into consideration, it will be seen that they conform more with the general type of the African Negro than of any other race. The cranium, especially that of the female, is shorter and rounder than in the generality of Negroes, but still not quite to the same extent as some previous statements as to the form of the head of the Akkas might lead to suppose, being not even brachycephalic, much less "almost spherical" as described by Schweinfurth. In fact, the mean of the two, 76·1, agrees closely with the mean of three living heads previously measured, which is 78·03, or between 76 and 77 for the dried skull. Forty-two African Negroes of various tribes measured in the Museum of the College of Surgeons, gave an average index of 73·6, which corresponds almost exactly with the average obtained by Broca (73·4) from 85 Negroes from the West Coast. In this tendency towards brachycephalism they bear out Huxley's views as to one of the general characteristics of the "Negrillo" race, consisting of various tribes of small stature extending across Equatorial Africa. Prognathism, platyrrhiny, the elongated narrow form of the palate, and the large size of the teeth, all characteristic features of the Negro races, are not only present, but present in an exaggerated form in the Akkas. One, and perhaps I may say, the only special character (except, of course, the diminutive size) is the markedly microseme form of the orbits; but this is a character of great variability in different individuals; and in

<sup>1</sup> "Journ. Anthropol. Inst.," vol. x, p. 161.

<sup>2</sup> See "On the Size of the Teeth as a Character of Race," "Journ. Anthropol. Inst.," vol. xiv (November, 1884). The dental index of male Europeans is 40·5, of African Negroes 43·2, Andamanese 44·4, Australians 44·8, Tasmanians 47·5.

as many as seven out of forty-two ordinary Negroes it is lower than in the present specimens.<sup>1</sup>

The striking difference in so many characters from the skull of the Negritos of the Andaman Islands, has been pointed out in the course of the description.

### *Cranial Measurements.*

	Male.	Female.
Maximum length .. .. .	168	163
Height (basi-bregmatic) .. .. .	—	124
Maximum transverse diameter (parietal) .. .. .	125	127
Length-breadth index .. .. .	74·4	77·9
Minimum frontal diameter .. .. .	82	86
Maximum frontal diameter .. .. .	103	103
Occipital diameter .. .. .	100	97
Bi-auricular diameter .. .. .	107	107
Horizontal circumference .. .. .	468	462
Vertical transverse circumference.. .. .	377	385
Transverse arcs, frontal .. .. .	257	250
———— bregmatic .. .. .	270	278
———— parietal .. .. .	290	297
———— occipital .. .. .	250	232
Longitudinal arcs, frontal .. .. .	118	108
———— parietal .. .. .	110	120
———— occipital .. .. .	113	107
Length of foramen magnum .. .. .	—	28
Basi-nasal length .. .. .	92	92
Basi-alveolar length .. .. .	100	96
Gnathic index .. .. .	108·7	104·3
Bi-zygomatic diameter .. .. .	118	109
Bi-jugal diameter .. .. .	104	99
Inter-orbital diameter .. .. .	21	20
Height of face (ophrion to alveolar point) .. .. .	72	72
Height of orbit .. .. .	29	29
Width of orbit .. .. .	35	35
Orbital index .. .. .	82·9	82·9
Height of nose .. .. .	41	38
Width of nose .. .. .	26	21
Nasal index .. .. .	63·4	55·3

### *Vertebral Column.*

The curve of the vertebral column in the lumbar region as a race character has lately been studied by Prof. D. J. Cunningham,<sup>2</sup> and Sir William Turner,<sup>3</sup> and an index has been formed

<sup>1</sup> The average orbital index of these forty-two skulls is 86·3.

<sup>2</sup> "The Lumbar Curve in Man and the Apes," Cunningham, "Memoirs of the Royal Irish Academy," No. II (1886).

<sup>3</sup> Voyage of H.M.S. "Challenger." "Report on the Human Skeletons," Part II (1886).

based on a comparison between the vertical lengths of the anterior and posterior surfaces of the bodies of the lumbar vertebrae. This index in the mean of twelve Europeans, measured by Turner, is 96·0, in five Australians 106·0. In two Andamanese Islanders 99·0, and in three Negroes 99·0. Cunningham gives for Europeans an almost identical index (viz., 95·8), derived from a much larger series of observations, and 105·4 for Negroes, 104·8 for Andamanese, and 107·2 for Tasmanians. These three last come into the category called by Turner "*koilorachic*," or with the lumbar curve concave forwards, while in the European races, on the other hand, it is convex forwards. The Akkas, as might be expected, are decidedly *koilorachic*; the index of the male being 102·6, that of the female 105·1, giving a mean of 103·8. The details are given in the table below, but it may be remarked that there was some difficulty in estimating the exact dimensions of the vertebrae of the male, owing to the want of union of the epiphysial discs, while in the female, as mentioned before, senile changes, *i.e.*, flattening of the bodies and outgrowths of bone from their margins, had already set in.

*Measurements of Lumbar Vertebrae.*

			Male.			Female.		
			Ant.	Post.	Index.	Ant.	Post.	Index.
First .. ..	22	23	104·5	18	20	111·1		
Second .. ..	22	24	109·1	20	22	110·0		
Third .. ..	23	25	108·7	20	22	110·0		
Fourth .. ..	23	24	104·4	20	21	105·1		
Fifth .. ..	24	21	87·7	20	18	90·0		
Total .. ..	114	117	102·6	98	103	105·1		

*Pelvis.*

Of the various measurements of the pelvis which afford distinctive race characteristics, those which give the general outline of the brim, and from which what is commonly called the "pelvic index" is derived, are undoubtedly the most important. Sir William Turner has divided pelves into three groups,

*dolichopellic*, *mesatopellic*, and *platypellic*, according as this index is low, medium, or high. The first-named group have narrow pelves elongated from before backwards (as in the *Simiade*), the latter have comparatively wide short pelvic brims. The lowest types of mankind, the Australians, Bushmen, Andaman Islanders, and most Negroes have pelves generally formed on the former type, while Europeans are the most decidedly platypellic. As before-mentioned, the pelvis is, unfortunately, wanting in the male Akka skeleton, but that of the female is remarkable for its dolichopellic character, the transverse and antero-posterior diameters of the brim being equal (98 mm.), and the index, therefore, 100. It is, of course, only with the pelves of females that this index can be compared, and the following examples of mean indices of pelves of this sex belonging to several races will give materials for appreciating the significance of this character.

*Extreme Platypellic Forms.*

35 Europeans (Verneau)	..	..	..	..	..	78.
14 Europeans (Flower)	..	..	..	..	..	78
11 Europeans (Turner)	..	..	..	..	..	79
Europeans (Garsou)	..	..	..	..	..	80

*Extreme Dolichopellic Forms.*

31 Negroes (Turner)	..	..	..	..	..	88
8 Bushmen (Turner)	..	..	..	..	..	89
5 Australians (Garsou)	..	..	..	..	..	91
13 Andamanese (Flower)	..	..	..	..	..	96 <sup>1</sup>
1 Akka ..	..	..	..	..	..	100

*Principal Measurements of the Pelvis on the Plan recommended by Turner.*

Breadth of pelvis	..	..	..	..	..	198
Height of pelvis ..	..	..	..	..	..	153
Breadth-Height Index	..	..	..	..	..	77
Between ant. sup. iliac spines	..	..	..	..	..	188
Between post. sup. iliac spines	..	..	..	..	..	51
Between ischial tuberae	..	..	..	..	..	121
Between ischial spines	..	..	..	..	..	97
Greatest diameter of cotyloid cavity	..	..	..	..	..	39
Vertical diameter of obturator foramen	..	..	..	..	..	40
Transverse diameter of obturator foramen	..	..	..	..	..	26
Obturator Index ..	..	..	..	..	..	65
Subpubic angle ..	..	..	..	..	..	65°
Transverse diameter of brim	..	..	..	..	..	96
Antero-posterior diameter of brim	..	..	..	..	..	96

<sup>1</sup> Only one of these exceeded 100. It was as high as 107·8. The pelvis of a female Bushman in the Museum of the Royal College of Surgeons has an index of 102.

<i>Pelvic or Brim Index</i> .. .. .	100
Intertuberal diameter .. .. .	88
Depth of pubic symphysis .. .. .	14
Depth of pelvic cavity .. .. .	68
Height-length of ilium .. .. .	95
Breadth of ilium.. .. .	120
<i>Iliac Index</i> .. .. .	126
Breadth of innominate bone .. .. .	140
Length of os pubis .. .. .	56
<i>Pubo-innominate Index</i> .. .. .	40
Length of ischium .. .. .	65
<i>Ianominate Index</i> .. .. .	91
<i>Ischio-innominate Index</i> .. .. .	42
Length of sacrum .. .. .	85
Breadth of sacrum .. .. .	83
<i>Sacral Index</i> .. .. .	96·5

*Bones of the Limbs.*

The scapulæ are of remarkably small size. In that of the male there is a small distinctly defined supra-scapular notch. In that of the female this is replaced by a wide shallow depression, without definite edges, but still it is more distinctly marked than in the majority of the Andamanese, where there is only a gradual and shallow excavation of the whole upper border. For measurements the male could not be used, as the epiphysis of the posterior border had been detached. In the female, the breadth from centre of posterior and outer border of glenoid fossa (A) to where the spine rises from the vertebral border (B) in the right is 81 mm., in the left 84; the length from posterior superior (C) to inferior angle (D) 103 mm. in both; the infra-spinous length (B to D), right 74 mm., left 73 mm. From these measurements the "scapular index" and "infra-spinous index" of Broca<sup>1</sup> are derived, and they are of a very remarkable character, being far above the average of Negro or of any other human scapulæ hitherto recorded, as the following comparisons will show:—

	200 Europeans.	21 Andamanese.	6 Negroes.	1 Akka.
Scapular index ..	65·2	69·8	71·7	80·3
Infra-spinous index	89·4	92·7	100·9	112·2

The measurements of the long bones, and the indications they

<sup>1</sup> Broca, "Bulletin de la Société d'Anthropologie de Paris," i, (3<sup>e</sup> ser.), 1878, p. 66. Flower and Garson "On the Scapular Index as a Race Character in Man," "Journal of Anatomy and Physiology," vol. xiv, p. 13 (1879).

give of the proportions of the different segments of the limbs are always of interest. The following are actual measurements taken upon the same system as that used for the natives of the Andaman Islands, *i.e.*, the maximum length in a direction parallel to the long axis of the bone, and in the case of the tibia including both malleolus and spine.

	Humerus.		Radius.		Femur.		Tibia.	
	R.	L.	R.	L.	R.	L.	R.	L.
Male ..	238	233	182	177	326	328	270	273
Female ..	244	236	194	188	—	334	270	272

The following indices are derived from these measurements.

The inter-membral index, or length of the humerus and radius added together, compared with that of the femur and tibia, the latter being taken as 100, is 67·7 for the male, and 72·9 for the female, the last having larger arms and especially forearms than the male. This is contrary to the rule found with the Andamanese, but of course no general conclusion in such a case can be drawn from single individuals of each sex. The mean index of the two Akkas is 70·3, that of the Andamanese of both sexes 68·3.

The femoro-humeral index is almost identical in the two specimens, being 72·0 in the male and 71·9 in the female. This accords rather with the usual proportion of the European (72·9, Flower, 72·2, Broca), than that of the Andamanese (69·8), and the Negro (69·0, Broca).

The femoro-tibial index in the male is 83·0, in the female 81·1. The proportions of these bones again rather resemble those of Europeans than those of the black races with which they would naturally be compared, this index being 84·6 in Andamanese of both sexes, 84·9 in Australians, 84·7 in Negroes (Humphry), and 82·1 in Europeans.<sup>1</sup>

The humero-radial index, or the length of the radius as compared with the humerus, as is well known, presents greater and more constant differences in the various races of men than any other of the limb characters. It has been found to average 73·4 in Europeans (Topinard), 76·5 in Australians, 79·4 in Negroes, and 80·6 in the natives of the Andaman Islands. In this index the Akkas agree completely with the other Negroid races, that of

<sup>1</sup> "Journ. Anthropol. Inst.," vol. x, p. 20.

the male being 76·2, that of the female 82·9, giving a mean of 79·5. It may be noted that the proportions of these bones in the two sexes are again the reverse to the Andamanese, in whom the index of the male is 81·5, of the female 79·7.

The individual bones are generally well proportioned, though rather slender and smooth, and with the ridges for muscular attachments not very strongly marked. It may be noted that there are small intercondyloid foramina in both humeri of the male, and in one (the right) of the female. The tibiae are not platycnemic. Those of the male are rather rounded, having an index (at the middle of the length of the bone) as high as 77·5. Those of the female are, as with the bones generally, of more slender form, the index being 710. In the Andaman Islands these indices were 647 and 675 in the male and female respectively.

In Topinard's "Anthropologie" (p. 1099) is an interesting table showing the influence of the general size of the body, upon the proportions of its component parts, as ascertained by measurements upon a number of skeletons of Europeans. On comparing the proportions of the mounted Akka skeleton with those of the table, allowance must of course be made for difference of race and sex, but it is singular that in every particular, its proportions agree rather with the tall than with the short group. As shown before in the height of the head, it is now seen in the limbs that there is nothing in the characters or proportions of these little people resembling those of dwarfs of other races, a result which is certainly different to what might have been anticipated.

*Proportions according to height. Stature = 100.*

	Tall French. Height 2·06 to 1·73.	Short French. Height 1·43 to 1·60.	Akka ♀. Height 1·218.
Trunk (seventh cervical to end of sacrum)	33·7	34·7	31·1
Humerus .. ..	19·8	20·0	19·8
Radius .. ..	14·4	14·5	15·7
Femur .. ..	27·7	27·2	27·5
Tibia .. ..	22·4	21·8	22·3

The most striking difference between the Akka and the French skeletons is the proportions of the trunk, but this is a measurement on which it is impossible to place absolute reliance in

articulated skeletons. It is, moreover, probably a race characteristic, as in the table at p. 1066 of Topinard's work, showing this proportion in skeletons of different races, in the Negroes it is given as 31·9, and in Tasmanian as 30·4. The Akkas might naturally be supposed rather to resemble these than the Europeans. The difference in the proportion of the radius is also, as pointed out, a race character.

### *Conclusions.*

The evidence afforded by these skeletons quite corroborates the view previously derived from external observation that the Akkas are among the smallest, if not actually the smallest, people upon the earth. There is no reason to suppose that they were selected as being in any way exceptional specimens, and yet they are both of them smaller than any other normal skeletons which have hitherto been available for comparison; smaller, that is, than the smallest Bushman skeleton out of three in the Museum of the Royal College of Surgeons,<sup>1</sup> and smaller than any out of the twenty-nine skeletons of diminutive inhabitants of the Andaman Islands, the measurements of which I have recorded. The most liberal calculation of the height of these two skeletons places the male at not more than 4 feet, and the female not an inch above, while the living female measured by Emin Pasha is barely 3 feet 10 inches. The results previously obtained from the measurements of about half a dozen living Akkas are not quite so low as these, varying from 1,216 to 1,420 mm., and give a mean for both sexes of 1,356 mm., or 4 feet 5·4 inches.<sup>2</sup> Schweinfurth's original measurements were unfortunately lost, and the numbers since obtained are certainly insufficient for establishing a true average of the race. It is, moreover, possible that some of the individuals measured were not of pure blood and any mixture with other tribes must tend to increase the stature, or that their growth had been promoted by the exceptionally favourable circumstances under which they had been living with their European protectors, as in the case of those brought from the Monbotto country by Miani, and who were for many years living in Italy.

In the list given in the third edition of Topinard's "Anthropologie" (1879), only two races appear which have a mean height below 1,500 mm., viz., the Negritos, 1,478, and the Bushmen, 1,404; the Veddahs of Ceylon, being (according to Bailey) 1,534. Of the size of the Negrito inhabitants of the

<sup>1</sup> The height of this skeleton is 1,332 mm. (4 feet 4·5 inches), its shortest femur measures 356 mm., that of the male Akka being only 326 mm.

<sup>2</sup> Quatrefages, *op. cit.*, p. 260.

Andaman Islands we have abundant and exact evidence, from the measurements of the living by Mr. Man, and the skeletons by myself and others, and, as shown above, the Akkas are considerably below them in stature. That this is also the case with the Bushmen I have little doubt, as although single individuals have been stated by travellers to be of extraordinarily small size, all those who have been submitted to actual anatomical examination, and whose skeletons are preserved in Museums, considerably exceed the Akkas in height.

This point being settled it remains to show to what races the Akkas are most nearly allied.

That they belong in all their essential characteristics to the black or Negroid branch of the human species there can be no doubt, in fact they exhibit all the essential characters of that branch, even to exaggeration. With regard to the more rounded form of head, Hamy<sup>1</sup> has pointed out that in Equatorial Africa, extending from the west coast far into the interior, are scattered tribes of Negroes, distinguished from the majority of the inhabitants of the continent by this special cranial character, as well as by their smaller stature. The Akkas are grouped by Hamy and Quatrefages as members of this so-called "Negrillo" race.

Their small size has naturally led some anthropologists (including Schweinfurth) to seek affinities for them with the diminutive African race inhabiting the southern portion of the continent, the Bushmen, but beyond certain characters met with in the whole Negroid branch, including the frizzly hair, there is little in common between them. The Bushmen are a very strongly marked race, and both their external appearance and osteological characters are so exceptional that they can never be compared with any other. Their only near allies are the Hottentots, formerly inhabiting the same region of the world.

The peculiar oblong form of the skull, its vertical forehead, straight sides and flat top, the wide flat space between the orbits, the extremely small and flat nasal bones, and the absence of prognathism at once distinguish the skull of the Bushmen from that of the Akka. Moreover, the well-known and characteristic features and yellow complexion of the Bushmen, are quite unlike those of the Akkas whose portraits have been given; nor do these latter appear to possess the special characters, steatopygia and elongated nymphae, so prevalent among the Bushmen.

Sufficient comparisons have been drawn between the Akkas and the Andamanese to show that there is no close relationship between the former and the Negritos of the east, their position

<sup>1</sup> "Essai de coordination des matériaux récemment recueillis sur l'ethnologie des négroïdes ou pygmées de l'Afrique équatoriale." "Bulletin de la Société d'Anthropologie de Paris," Tome 2 (Ser. III), p. 79 (1879).

then remains determined as belonging to the division of the Negro race, to which Hamy has given the appropriate name of Negrillo.

## APPENDIX.

Observations taken by Dr. Emin Pasha upon a full-grown Akka woman who lived several years in his house at Lado; upon the system given by Broca in the "Instructions Anthropologiques."

*Observations Anthropologiques sur le Virant.*

No. 15 (normal).	Lieu de l'observation: Lado.	Nom de l'observateur: Dr. Emin
Date. le 4 Mar, 1883.	15-16 ans, mariee	By
Nom du sujet. Mengueté.	Profession servante.	Née à Boro (pays des Meadjo).
Nation: Akka.		Race: Nègre.

Le sujet est-il maigre, gras ou moyen?

*Gras.*  
Pulsations par minute ... 96 *puls.*  
Respirations par minute ... 22 *respir.*

## DÉTAILS DESCRIPTIFS.

Couleurs: Peau parties nues No. 28  
" " couvertes id.  
Cheveux... No. 41  
Barbe ...  
Yeux ... No. 3

Cheveux sont-ils droits, rudes, bouclés, frisés ou lamenteux? *abondants et lamenteux.*

Barbe est-elle abondante, rare ou nulle?

Peau glabre, un peu velue ou très-velue? *très-velue.*

Forme du profil du nez: *platyrrhinus aplatis.*

Lèvres: grosses, moyennes ou fines? *Moyennes.*

Droites ou renversées en dehors? *un peu renversées en dehors.*

Dents: grandes, moyennes ou petites? *petites.*

Dents incisives: verticales, un peu obliques ou très-obliques? *un peu obliques.*

Denture: très-bonne, bonne, médiocre, mauvaise ou très-mauvaise? *très-bonne.*

## REMARQUES PARTICULIÈRES.

Oreilles grandes, lobules attachés.  
Seins bien grands: areole grande, noirâtre.  
Mains petites.

## POUR NORME.

N B.—Les mesures ont été prises avec l'aide d'un excellent appareil français dont M. Vossion a bien voulu me faire cadeau.

## MESURES DE LA TÊTE.

## A. Crâne.

1° Diamètres	mm.
Antéro-postérieurs: maximum	166
id. : bilaciale	157
Transverses: maximum	133
sous-auriculaire	119
temporal, maximum	128
frontal, minimum	107
Vertical auriculaire	122.5
2° Courbes.	
Infro-frontale totale	318
sa partie frontale totale	137
sa partie sous-cérébrale	
antérieure	12
Horizontale totale	492
sa partie antérieure	248
Transversale bi-auriculaire	326
id. sus-auriculaire	257

## B. Face.

1° Angle facial de Camper	73°
2° Pour les indices.	
Du point mentonnier à la naissance des cheveux	136
De l'ophryon au point alvéolaire	70
longueur bi-zygomatique	110
longueur du nez	43
longueur du nez	30
3° Longueurs	
de l'ophryon à la naiss. des cheveux	31
de l'ophryon à la racine du nez	10
" au point sous-nasal	53
du point sous-nasal au point alvéolaire	21
du point sous-nasal au point mentonnier	43
hauteur du menton	26
4° Largeurs	
bi-orbitaire	88
bi-auriculaire	29
palpébrale	26
bi-malaire	101
buccale	41
bi-géniaque	95
5° Mesures obliques.	
genio-nasale	87
genio-mentonnière	88

## MESURES DU TRONC ET DES MEMBRES

1° Hauteurs au-dessus du sol.	mm.
du vertex (tête du sujet) ...	1164.5
du condur audien ...	1042
du bord inférieur du menton de l'épionomie ...	975
de l'épionomie ...	958
de l'épionomie ...	735
de l'apophyse styloïde du radius ...	566
du bout du doigt médian ...	397.5
de la fourchette sternale ...	944
du mamelon ...	681
du bord supérieur du pubis ...	582.5
du raphe du pénis ...	477
de l'épine iliaque antérieure supérieure ...	651.5
du bord supérieur du grand trochanter ...	587.5
de la ligne articulaire du genou ...	293
du sommet de la malléole interne ...	57
de la saillie du mollet ...	230.5
2° Membre supérieur.	
la grande envergure ...	1245
le grand empan ...	119
le petit empan ...	163
longueur du ponce (face dorsale) ...	47
" du médus (id.) ...	79
3° Tronc.	
distance du deux acromions ...	228
longueur de la clavicle ...	110
largeur du thorax ...	201
en contenance du thorax sous les aisselles ...	620
circonférence du thorax à la ceinture ...	702
distance des deux épines iliaques ...	202
" max. des deux crêtes iliaques ...	204
distance max. des deux grands trochanters ...	211
4° Membre inférieur.	
circonférence max. de la jambe (mollet) ...	247
circonférence min. de la jambe (sus-malléolaire) ...	171
longueur du pied totale ...	196
" " pré-malléolaire ...	148
" du gros orteil (face dorsale) ...	36
5° Hauteur du vertex au-dessus du sol, le sujet étant assis ...	600





SKULLS OF AKKAS

سید علی احمد کاکڑ

10-11-1944



1/2 nat. size

J. Smith & Co. 1910

W. H. K. & Co. 1910

SKULLS OF AKKAS

*Description of Plates I, II, and III.*

Skulls of the male and female Akkas. The former in each case is placed in the upper part of the plate. Half the natural size. Drawn without perspective.

Plate I	..	..	Lateral surface.
Plate II	..	..	Facial surface.
Plate III	..	..	Upper surface.

DISCUSSION.

Mr. HYDE CLARKE said that in 1874 his attention was called to the Akkas by his old friend, the African traveller and naturalist, Marchese Orazio Antinori. Being supplied with the materials he examined the language and found it conformed with the general body of pre-historic languages throughout the world. It showed some resemblances to the language of the Obongo dwarfs to the south, discovered by Du Chaillu. It also showed resemblances to the Naga of India and the Carib of South America. Speech-language is a late event in the historical scale, and was received from a cultured race and not locally developed. His own speculations that there was a community of many words among the short races was so far true on account of the community of all languages; but in speaking of languages of short races he had pushed the speculation into the regions of error, as had the leading men of science who appropriated classes of language to frizzled or tufted hair. He concurred with Prof. Flower as to the great interest of these dwarf races, the subject of pre-historic truth and fable. He thought that the stories of dwarfs, giants, and cannibals came not from the taller races, but from the dwarf or oppressed races. To a man of 4 feet a tall man would have the semblance of one of 9 or 10 feet to ourselves. The story of the pygmies fighting with cranes had perhaps its origin in Bushmen hunting ostriches. There was one problem awaiting solution, the relation of the Japanese to the short races of Africa, on which he had published some observations.

Prof. THANE, Dr. GARSON, Mr. OLDFIELD THOMAS, and the PRESIDENT also joined in the discussion, and the AUTHOR replied.

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The following paper was read by the Author:—

*On SKULLS from the HINDU KUSH DISTRICT.*

By J. G. GARSON, M.D., V.P.A.I., Lecturer on Comparative Anatomy at Charing Cross Hospital.

THE skulls which I have the pleasure of bringing under your notice to-night, were obtained recently during a journey through Chitral, a district of country situated south-east of the Hindu Kush range of mountains, in about the 36th degree of north latitude, and 74th degree east longitude. This portion of Asia has hitherto been little explored by travellers, and, as I believe, no skulls have previously been brought home to any of our European Museums from it, there is a certain amount of interest attaching to these on the table before us, which render it desirable that their characters should be described and recorded in the pages of our "Journal." The skulls have been presented to the Museum of the Royal College of Surgeons of England, where they will henceforth be carefully preserved and rendered available for scientific study.

Little seems to be known regarding the physical characters of the people inhabiting this region. I have only been able to find the very general and indefinite statements that their features show them to be pure Aryans, and that they consist of several tribes. Bidulph, however, in his work on "The Tribes of the Hindu Kush," gives valuable information regarding the languages spoken in this district. Having been unable to obtain information regarding the physical characters of the people, I am obliged to confine my remarks, on the present occasion, to their craniology, and abandon any attempt at comparing the characters presented by the living with those of the skeleton, though I am fully aware of the importance of so doing, and the incompleteness of any description containing an account of one set of characters only.

The series consists of five specimens, one of which was taken from a grave at Parplish, a district where the Khowar dialect is spoken; another was found under a mass of stones at Ghizar, below the Pandar Lake, and near the junction between Khowar and Shina speaking populations; the other three are reputed to be those of Yasinese, a tribe speaking the Bouriski dialect, obtained at Garkuch, which is not, however, in Yasin territory; but there is the tradition among the people of Garkuch, that these, and many others buried in the caves amongst the rocks near the village, are the remains of Yasinese who were slain by Ger Bhennau, a Khan who invaded and conquered Garkuch about 80 years ago. These Yasin skulls have belonged to middle-aged persons, while the other two specimens are those of aged persons, as shown by the atrophied condition of the maxillary bones.

When the skulls are viewed as they are arranged in a row on the table before you, it will be readily seen that in their general characters they present a close resemblance to one another, but, in each specimen, there are minor differences which may be detected on closer examination. These differences are particularly marked in the specimen obtained from Ghizar, and are sufficient to distinguish it from the others, between which the differences are more of an individual, than of a racial or tribal character.

The general outlines of the crania, when viewed from above, may be called "lozenge-shaped," that is to say, they have a regular and nearly oval outline. In one of the Yasin crania, (marked 630 B), the forehead is considerably broader than in the others, hence its outline has a squarer appearance than the rest; in another of the Yasin skulls (marked 630 C), the parietal eminences are strongly developed, which gives it an irregularly oval outline. Reference to the table of measurements will show that the actual length of the cranium is very constant in the whole series, varying only 5 mm., the longest cranium measuring 181 mm. while the shortest is 176 mm. Somewhat greater variation occurs in the measurement of maximum breadth, which varies from 140 mm. in the broadest to 128 mm. in the narrowest specimen. The cephalic index, which indicates the relation of breadth to the length of the cranium, varies from 72.3 to 79.5. Two of the specimens, namely, one of the Yasin skulls (630 C), and that from Ghizar, belong, under the international system, to the dolichocephalic group (with indices from 70-74.9), all the other specimens are mesocephalic (with indices from 75-79.9); but while the other two Yasin skulls are at the lowest end of this group, their indices being between 75 and 76, the cranium from Parplish is at its upper end, having a cephalic index of 79.5.

The height of the crania is in all cases less than the breadth, consequently the height or altitudinal index is always lower than the cephalic index, averaging in the series 71.2 while the cephalic index averages 75.4. In the cranium from Parplish, above noted as having the highest cephalic index, the height index is only 72.1.

The forehead is somewhat receding in all the specimens except the Yasin skull, No. 630 B, in which it is exceedingly vertical, and also considerably broader than in any of the others. The superciliary ridges and glabella are feebly developed in all cases except the specimen from Ghizar in which they are prominent and strongly developed. The frontal suture is completely obliterated in every instance except in the Yasin skull, No. 630 B. The other sutures are simple nearly closed in the Yasin

skull, No. 630 C, but considerably more open in the others, notwithstanding the fact that some of them have belonged to older persons. In complexity the sutures vary from Nos. 3-4 of Broca's table.<sup>1</sup> Wormian bones varying in size from 6-10 mm. in diameter are present in the parieto-occipital sutures of nearly all the specimens, and an epiteric bone is developed on the right side of the Parplish specimen. The mastoid processes are small in all cases except the Ghizar skull. The surface of the cranium is generally smooth and rounded, there being an entire absence of roughened surfaces: the lines on the frontal bone marking the attachment of the temporal fascia are well defined. The posterior projection of the occipital bone is well marked. The inion is very feeble except in the Parplish skull where it is more pronounced.

The cranial capacity could be measured in only four specimens, the Ghizar skull not being sufficiently complete to permit of being cubed. The average capacity of the four crania is 1,376 c.c., measured with shot strictly in accordance with Broca's method. The average is reduced by the small capacity of the Yasin skull, No. 630 C, which measures only 1,223 c.c., or 157 c.c. less than the next smallest cranium.

Passing on to the characters of the facial portion of the skull we find that the *gnathic index*, which indicates the degree of prominence of the maxillary bones and of the face generally, averages 92.1 in the Yasin skulls—the only specimens in which it could be determined. In the most orthognathous skull the index is 89.8, and in the most prognathous it is 93.9. All these specimens, therefore, range well under the upper limits of the orthognathous group (98.0),<sup>2</sup> and indeed indicate a greater degree of orthognathism than obtains amongst Europeans, in whom the gnathic index averages 96.2.

The form of the nasal portion of the face is long and narrow in all cases except the Yasin skull, No. 630 B, in which it is broad in proportion to the length. The average nasal index is 45.8, which places them in the leptorhine group (below 48.0). The average index is considerably raised by the skull, No. 630 B, just mentioned, having an index of 52.9 which is almost the highest limits of the mesorhine group. The high index of this specimen is produced by the breadth of the nasal opening being considerably greater than in the other specimens, while the length measurement on the other hand is normal. It is possible that the breadth is somewhat exaggerated by the margins of the opening having been broken away a little as they are very thin.

<sup>1</sup> "Instructions Craniologiques."

<sup>2</sup> Flower, "Catalogue of Human Osteology in the Museum of the Royal College of Surgeons of England."

The curve of the nasal bones is long and open, corresponding to that indicated by No. 3 of Broca's table, except in the case of the Yasinese skull, No. 630 C, in which it is short and more acute, corresponding to No. 1 Broca. The under margin of the nasal opening is sharp and well defined. The nasal spine is small in size, corresponding to No. 2 of Broca's tables. The orbits are very round and open, the average orbital index being 97.4. The upper rim of the orbits is thin and smooth. The interorbital width is considerable in some instances, but normal in others. The naso-malar index, which expresses the relative proportion of the arc measured from the most posterior part of the external margin of one orbit over the nose to the corresponding point of the other orbit, named in the table the *Jugo-nasal arc*, to the transverse diameter between these points on the orbital rims, named in the table the *Internal bijugal diameter*, this being taken as 100, averages 110.1, and shows very little variation in the four specimens where it could be ascertained. This index is one of considerable importance, as it indicates exactly the relative projection of the nose beyond the plane of the external margins of the orbital cavities, and thus indirectly indicates the degree of acuteness or obtuseness of the nasi-malar angle, and that with a much greater degree of accuracy than could ever be realised by direct measurement of the angle itself. Mr. Oldfield Thomas<sup>1</sup> found this index averaged 111.1 in sixteen Caucasians; 105.9 in nine Mongolians; and 107.4 in nine Timor Laut Malays. Thus in the Mongolians this index is very low, indicating great flatness of the face, and consequently a very obtuse nasi-malar angle, which we know to be one of the most marked characteristics of their physiognomy, whereas in the Caucasians the reverse obtains. These fundamental distinctions between the two races being well established, the naso-malar index of these Chitral skulls clearly indicates that they are in no way related to the Mongolian race as it might not unnaturally have been supposed they were.

The facial index, formed by estimating the proportions which the nasio-mental length bears to the bizygomatic breadth, could only be ascertained in two Yasin skulls, Nos. 630 B and C, in which it is 84.4 and 90.8 respectively. The mid-facial index, or the relative proportion between the nasio-alveolar length and the bizygomatic breadth could be accurately determined in the three Yasinese skulls, in which it is very constant and averages 54.2, making them dolichofacial, or leptoprosopic (= 50 and upwards), according to the Frankfurt craniometric agreement.<sup>2</sup>

The mandible is present in two of the Yasinese specimens (630 B and C) and the Ghizar skull, but in this latter

<sup>1</sup> "Journ. Anthropol. Inst.," vol. xiv. p. 333 (1835).

<sup>2</sup> "Arch. f. Anthropol."

specimen it has become considerably altered from the teeth having been lost during life. The gonio-zygomatic index, or the relative proportion between the bigoniac diameter and the bizygomatic diameter ( $= 100$ ) is 73·4 and 73·3 respectively in the Yasinese skulls, and 89·5 in the Ghizar skull; in this latter, therefore, the mandible is considerably broader posteriorly than in the Yasinese skulls. The two Yasinese show considerable differences in the form of the anterior portion of the mandible: in 630 B it is broad and massive, while in the other, 630 C, the chin is narrow and pointed.

The palato-maxillary length and breadth could only be measured in the Yasinese skulls, and in them it varies considerably, being broad in 630 B, narrow in 630 C, and intermediate in 633 D. This causes considerable variety in the index, or the relation of breadth to length (the latter  $= 100$ ), which ranges from 129·2 in 630 B to 106 in 630 C.

Having noted the chief characters presented by these skulls, the question naturally will be asked—What affinities do they indicate that the people of the district whence they were obtained have to neighbouring nations? The series is far too small to base any reliable conclusions on regarding this important point, but I may say with considerable confidence that the variety which has been shown to exist in different parts of the skull, between the individual specimens, shows clearly that they are not those of a pure and homogeneous race, but are those of a mixed race, and likewise that the characters of the face, especially the nasomalar angle, show that they have no affinities with the Mongolians. The number of Afghan skulls at my disposal prevents any reliable comparison being made with them. For the present it will be best to consider them as being of the same stock as the inhabitants of Northern India.

CRANIAL AND FACIAL INDICES.

No. in Museum Catalogue.	Locality whence obtained.	Cephalic.	Height.	Gnathic.	Total facial.	Mid-facial.	Naso-malar.	Nasal.	Orbital.	Palato-maxillary.
630 B	Yasin	75·1	70·7	89·8	81·4	52·4	110·1	52·9	97·4	129·2
630 C	Yasin	72·3	69·5	93·9	90·8	55·8	109·7	47·9	92·1	106
630 D	Yasin	75·8	72·5	92·7	—	54·4	110·8	44·9	100	118·4
630 E	Parplish	79·5	72·1	—	—	—	109·7	37·7	100	—
630 F	Ghizar	74·3	71·5	—	—	—	—	—	—	—
Total ..		3770	3563	2764	1752	1626	4403	1834	3595	3536
Average ...		75·4	71·2	92·1	87·6	54·2	110·1	45·8	97·4	117·9

## CRANIAL AND FACIAL MEASUREMENTS.

No. in Museum Catalogue.	Locality where obtained.	Maximum length.	Maximum breadth.	Minimum frontal breadth.	Basio-bregmatic height.	Horizontal circumference.	Nasio-cranio-basilar arc.	Basio-nasal diameter.	Total longitudinal circumference.	Mento-nasal diameter.	Alveolo-nasal diameter.	Basio-alveolar diameter.	Jugo-nasal arc.
630 B	Yasin	181	136	101	128	515	400	98	498	108	66	88	109
630 C	Yasin	177	128	91	123	483	380	99	479	109	67	93	102
630 D	Yasin	178	134	95	129	500	395	96	491	—	68	98	103
630 E	Parplish	176	110	96	127	508	393	97	490	—	c 63	—	102
630 F	Ghizar	179	133	88	128	c 490	390	102	492	—	c 61	—	—
Totals ..		891	671	471	635	2496	1958	492	2450	217	825	279	416
Average ...		178.2	134.2	94.2	127	499.2	391.6	98.4	490	108.5	65	93	104

No. in Museum Catalogue.	Locality whence specimens obtained.	Internal bizygomatic diameter.	Inter- orbital width.	Bizygomatic diameter.	Biangular diameter.	Superior bizygomatic diameter.	Bigonial diameter.	Nose.		Orbit.		Palato-maxillary.	
								Length.	Breadth.	Breadth.	Height.	Length.	Breadth.
630 B	Yasin	99	26	128	116	92	94	51	27	38	37	48	62
630 C	Yasin	93	23	120	105	84	88	48	23	38	35	50	53
630 D	Yasin	93	23	125	110	85	—	49	22	35	35	49	58
630 E	Parplish	93	21	125	108	91	—	53	20	37	37	—	—
630 F	Ghizar	—	—	124	111	87	111	c 45	23	—	31	—	—
Totals ...		378	93	622	550	439	293	246	115	148	175	147	173
Average ...		94.5	23.3	124.4	110	89.8	97.7	49.2	23	37	35	49	57.7

Measurements with c placed before them are only approximate, and have not been included in calculating indices.

## DISCUSSION.

Dr. W. T. BLANFORD pointed out that many of the tribes inhabiting the Himalayas and Hindu Kush were of mixed origin, and that throughout Central Asia people of Mongolian descent were everywhere found intermingled with those of Persian derivation.

Prof. THANE and Prof. FLOWER also took part in the discussion

FEBRUARY 28TH, 1888.

FRANCIS GALTON, Esq., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The election of HENRY C. COLLYER, Esq., of Beech Holm, Park Hill Road, Croydon, was announced.

The following presents were announced, and thanks voted to the respective donors :—

## FOR THE LIBRARY.

From the AUTHOR.—Social History of the Races of Mankind.

Second Division. Oceano-Melanesians. By A. Featherman.

— Race and Language. By Horatio Hale.

From the PEABODY MUSEUM OF ARCHEOLOGY AND ETHNOLOGY.—The Twenty-first Report of the Museum.

From the ESSEX FIELD CLUB.—The Essex Naturalist. Vol. ii, Nos. 1, 2.

From the DEUTSCHE GESELLSCHAFT FÜR ANTHROPOLOGIE, ETHNOLOGIE, UND URGESCHICHTE.—Correspondenz-Blatt. 1887, Nos. 10-12; 1888, No. 1.

From the SOCIÉTÉ IMPÉRIALE DES AMIS DES SCIENCES NATURELLES, D'ANTHROPOLOGIE ET D'ETHNOGRAPHIE, MOSCOU.—Transactions. Vol. xlv, fas. 1, 2; Vol. xlvii, fas. 1, 2; Vol. xlviii, fas. 1; Vol. xlix, fas. 1, 2, 3; Vol. l, fas. 1, 2; Vol. li, fas. 1; Vol. lii, fas. 1, 2, 3.

From the SOCIETY.—Proceedings of the Royal Society. Nos. 261, 262.

— Journal of the Society of Arts. Nos. 1838, 1839.

— Boletim da Sociedade de Geographia de Lisboa. 7ª Serie. Nos. 3, 4.

— VIII. Jahresbericht der Geographischen Gesellschaft von Bern. 1885-1887.

From the EDITOR.—Nature. No. 956.

— Timehri. No. xii.

— Science. Nos. 261, 262.

— Photographic Times. Nos. 333-335.

The following paper was read, on behalf of the author, by Dr. E. B. Tylor :—

NOTE on the JAPANESE GO-HEI, or PAPER OFFERINGS to the SHINTŌ GODS.

By BASIL HALL CHAMBERLAIN. (Communicated by Dr. E. B. TYLOR, F.R.S.)

[WITH PLATE IV.]

SOME European travellers have imagined that the heathen Japanese, prompted by equal frugality and irreverence, offer paper to their gods because it is the cheapest article at hand.

Others of a more curious turn of mind, have speculated on the coincidence of sound between *kami*, "god," and *kami*, "paper." The coincidence is fortuitous, *kami*, "paper," being apparently the corruption of a Chinese term, while *kami*, "god," is a native word meaning "above," "superior," and hence applied to "governors of provinces," the "government" in general, and to the "gods" themselves. Moreover, though paper is now used in the ceremonies of the Shintō religion, this was not so in early days, *i.e.*, in days preceding the eighth century of the Christian era. The offerings then were made of two kinds of cloth—a white kind made of the paper-mulberry (*Broussonetia papyrifera*), and a blue kind made of hemp. Such cloth was the most precious article in the possession of a population to whom luxury and art were unknown. Later on, when Chinese civilisation had brought a variety of manufactures in its train, hempen cloth ceased to be regarded as a treasure worthy of the divine acceptance; and, frugality perhaps helping, and partly also in accordance with that law of progress from the actual to the symbolical which characterises all religions, paper began to be used instead. We cannot tell the date of the change, Shintō having suffered such eclipse from the eight to the seventeenth centuries that little regarding its mediæval history has been preserved. During all that time Buddhism reigned supreme.

The specimens of *go-hei* on a stand (Pl. IV, fig. 1), such as is placed before the altar, were cut for me by Mr. Kakinuma Hiromi, an aged Shintō priest, who served for years at the shrine of Jeyasu at Nikkō and elsewhere. They are therefore only exactly representative of the pattern sanctioned by his sect, the *Yoshida-ryū*.

The *go-hei* of the other great Shintō sect, the *Shirakawa-ryū*, are slightly—very slightly—different. It should also be mentioned that the most important of all Shintō temples (those of

Ise, Igumo, and Kashima, and a few others) follow precedents of their own in this as in other matters of ritual. The chief distinction seems to be that caused by the varying number of the folds. While the Yoshida sect sanctions the use of four folds in the paper, the Shirakawa sect doubles the number and has eight (*see* fig. 2, Pl. IV). Having no wooden stand, each stick with its *go-hei* and hempen string should be stuck in a small vase, pot, or section of bamboo, such as is used for holding Japanese pencils.

The stickless *go-hei* (fig. 3) is a specimen of the shape adopted when the *go-hei* are to be hung in lines to a cord, as is often done in front of temples, also in front of houses at New Year time.

There is said to be no symbolism attaching to the shape, number of folds in the paper, length of the stick, &c. Each sect, or great temple, has clung to its traditional practice in these matters; that is all. The same is true of the other Shintō ceremonies, such as the offerings of rice, fish, and rice-beer to the gods. And what the priests say on this subject I incline to accept as true. Shintō appears to me, after a study of its chief documents carried on through a series of years, to consist not of fossilised ideas, but of fossilised ceremonies. The Japanese had few ideas before China and (through Buddhism) India were thrown open to them.

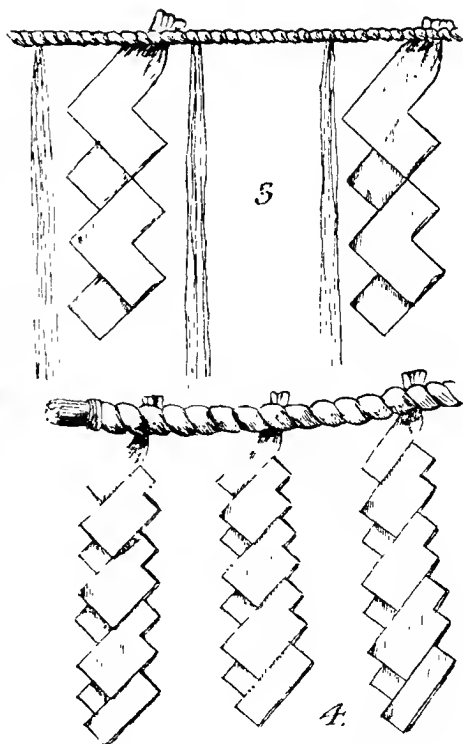
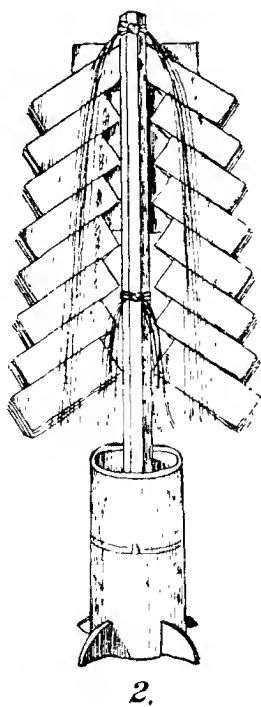
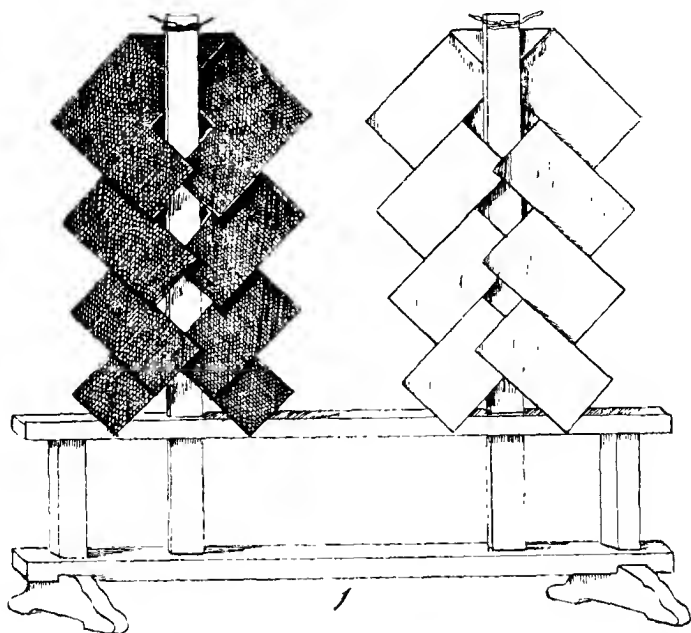
The very commentators of Shintō, patriotic as they are, and over anxious to magnify everything Japanese, at the expense of everything foreign, acknowledge that Shintō has no moral system, no body of views of any kind save worship of the gods, who were the ancestors of the Imperial House. Thus it was that Shintō collapsed utterly at the touch of Buddhism. Thus, too, is it that it fails to support itself now that an attempt has been made to revive it as a political factor. It has nothing in it that appeals to the religious instincts of the people.

#### *Description of Plate IV.*

Fig. 1. Fourfold *go-hei* on stand, placed before altar; cut by Kakinuma Hiromi, Priest at the shrine of Jeyau at Nikko (Yoshida sect).

Fig. 2. Eightfold *go-hei* of Shirakawa sect.

Figs. 3 and 4. *Go-hei* for hanging in lines on a cord in front of temple, or of houses at New Year. The specimens figured in this plate have been presented to the Oxford Museum by B. H. Chamberlain, Esq., Tokyo.





## DISCUSSION.

Mr. F. V. DICKINS, as having long resided in Japan, and studied Japanese life and thought, desired to offer a few observations. Shintō as usually written—it was a Sinico-Japanese, not a Japanese term—meant the way of the gods, in Japanese *kami no michi*. But the Japanese expression was a translation of the Chinese one merely, and for their oldest form of religion they had no native name whatever. This was a typical fact. The more what was called Shintō was examined, the more it was found to be Chinese in character, like everything else appertaining to the life of old Japan. Of the early history of Japan we know nothing. There were no documents, historic or archaeological. It began with the introduction of Buddhism and Chinese writing. Before Buddhism Confucianism had, no doubt, made its way across the eastern seas, and with it more or less of the old religion of China. How much of this old religion was mixed up in the oldest form of Shintō it was difficult to say, or rather how much of Shintō was not a mere imitation of the imported faith. It was hard to pick out anything in Shintō that could not be found in ancient Chinese religion, except the details of ceremonies. There were three kinds of Shintō—the latest the sort of eclectic or eliminative Shintō of the Revivalists of a hundred years ago; the Buddhist Shintō of Kūkai (*kōtōdaishi*); and the oldest that of the Kojiki, the Monyōshū, and the Norito. Its only ethical aspect was the practice of purification—a development probably of bodily cleanliness which experience had shown to be profitable and pleasant. The worship was not so much of ancestors as of heroes—war or culture heroes. There were no sacrifices, which is peculiar; there were simply offerings to the gods. Among these were offerings of cloths of different kinds fastened to the twigs of a spray of Sakaki (*Corymbus japonica*). This conventionalised and regularised would easily develop into the *go-hei*, a Chinese expression signifying not paper at all, but august offerings (*hei=nigate*). *Nusa* were rods bearing a bunch of hempen fibre commemorating, doubtless, like the *go-hei*, a useful invention. The *yensu* of the Ainos was probably derived from these *nusa*, if not original, as they well may have been. A black *go-hei* Mr. Dickins had not seen before. Shintō could not be called a religion; its mythology even was inorganic, but it had nevertheless played a most important part in Japanese history. It had preserved the unity of the country through many perils by its apotheosis of the Mikado as direct descendant of the gods, and intermediary between them and the empire, a position which the Buddhists never assailed. The Buddhists, indeed, did not assail Shintō, but appropriated its Pantheon. Every Japanese was born a Shintoist as a sort of agnate of the local god, lived under any faith he liked, and was buried with Buddhist rites, thus conciliating both the gods and Buddha.

EXHIBITION of ARROWS *from the SOLOMON ISLANDS.*

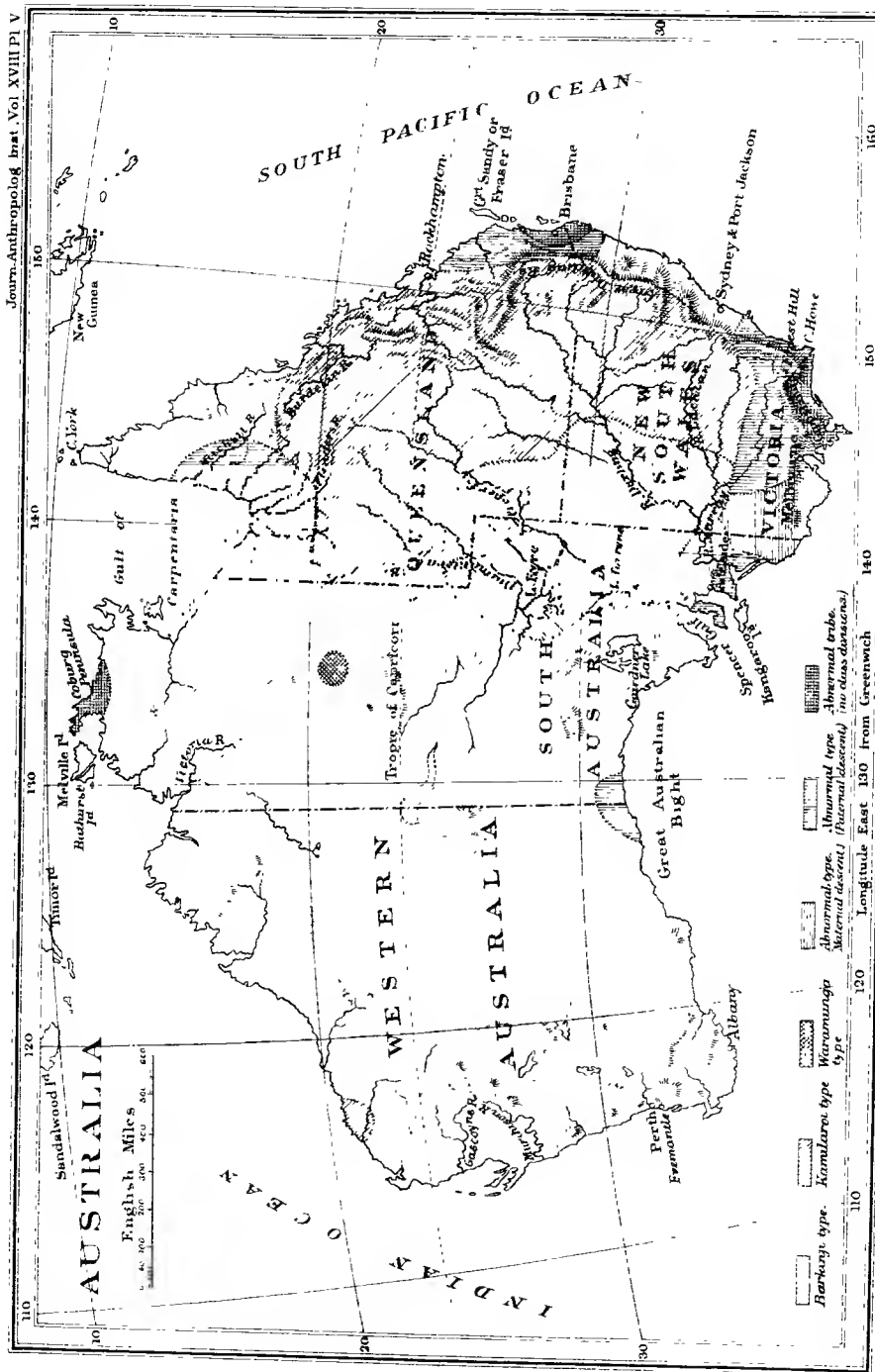
MR. HENRY BALFOUR, M.A., exhibited a series of decorated shafts of arrows from the Solomon Islands, and explained his theory of the development of the patterns. These arrows were described in a paper published in the last number of this "Journal" (Vol. xvii, No. 4, page 328), and illustrated in Plate VII, Vol. xvii.

Dr. E. B. TYLOR remarked that Mr. Balfour seemed to him to have made out his case. The Pitt-Rivers Museum at Oxford, in the arrangement of which Mr. Balfour is now engaged under Prof. Moseley, has become the headquarters for investigation of the development of ornamental art from originally structural and representative figures. This line of enquiry has been for many years promoted by General Pitt-Rivers, as in his well-known arguments as to the passage in savage art of human figures into mere geometrical patterns, and of the representations of coiled cords into the mæanders and frets of classic decorative art.

Mr. G. M. ATKINSON did not agree with the theory propounded by Mr. Balfour. For it would be observed that all the implements exhibited had the heads mounted on what was the root end of the cane or bamboo. The roughness (node, scar, or cicatrix) would be no impediment to the flight of the arrow. Nos. 2 and 3 of the series of arrows exhibited and relied upon as evidence of the development had highly decorated heads: pigments were largely used without a trace of this simple primitive idea: and the ornamentation on No. 9, the most developed shaft, might as likely represent a string wound round. A series of such decorations could be obtained, or paralleled, from a series even of bronze celts. Like produces like, and people in the same stage of culture or art, will produce the same kind of ornaments. The process of smoothing down the scar may be a possible, but, to the speaker's mind, it was a very improbable theory: and, judging by the specimens of arrows exhibited, the Solomon Islanders consider the roughness no inconvenience to the hand when shooting, for they have not removed the scar; both scar and ornaments are on some of the shafts.

Mr. BALFOUR explained that as it was necessary to first draw the arrow back over the bow hand before discharging it, the roughness would prove unpleasant, and besides a trial shows that it is certainly an inconvenience in the discharging, as there is considerable rasping power even when the shaft passes root foremost over the hand. The decorated heads of some probably derive their very different style of ornamentation from a different source, and need not influence the development in a primitive manner of a pattern on the shaft. The fact of there existing on the same shaft both scar and pattern may indicate an unfinished shaft, or a carelessly finished one, and, as remarked in the paper, it is introduced on purpose into the series to emphasize the loss of connection at this stage between the paring of the nodes and the pattern derived from the process.





The following paper was read, on behalf of the Author, by Dr. E. B. Tylor:—

FURTHER NOTES *on the AUSTRALIAN CLASS SYSTEMS.*

By A. W. HOWITT, F.G.S., F.L.S., Cor. Memb. Anthropol. Inst.

[WITH PLATE V]

*Introduction.*

IN a former communication to the Anthropological Institute<sup>1</sup> I reviewed the different class systems which up to that time had come under my notice. I now propose to note some further particulars which are important as showing that the various class systems are regarded by the aborigines as being the equivalents of each other, as explaining more clearly the different types on which the various systems are constructed,<sup>2</sup> and finally as showing broadly the geographical range of the types. Some little light is also afforded by these additional particulars on the manner of growth and decay of the systems.

In order to make succeeding remarks as clear as possible to the reader, I have added hereto a sketch map, showing approximately the boundaries of the several types of system<sup>3</sup> (Pl. V). These boundaries are necessarily only approximate, and will be liable to modification as further local details come in. But making full allowance for this, I do not anticipate that these alterations and additions will disturb the broad and important features which an inspection of the sketch map shows.

*Geographical Range of the Types of System.*

The information at my command enables me to cover a great part of the eastern half of the Continent, and there can be but little doubt that the western half, were it possible now to mark out the boundaries of the types of system obtaining over it, would show analogous results. Unfortunately I am not able to do this. Not because I have left the western half of the Continent outside my enquiries, but because those to whom I have written in Western South Australia, Western Australia, and the Northern Territory have remained deaf to my entreaties for information.

In the sketch map (Pl. V) I have marked out broadly the

<sup>1</sup> "Notes on the Australian Class Systems." "Journal Anthropol. Inst.," May, 1883.

<sup>2</sup> See p. 41.

<sup>3</sup> I have at present no data to shew the extent of country covered by the Waramunga type.

boundaries of the various types of class system. It is not probable, as I have already stated, that further enquiries will make any material alteration in the broad features thus shown, although they may do so in lesser details. For instance, it is not yet quite certain whether all the aboriginal communities in the "Gulf Country" of Carpentaria have agnatic descent. As to this my enquiries are still continuing, as also for the purpose of filling in the blanks which will be found in the Cape York Peninsula and the coast of Eastern New South Wales.

Before mentioning the conclusions to which a study of the range of types of system has led me, it is necessary to make a few remarks about the country over which they are spread. In descending from the Great Dividing Range and its downs and plateaux in North-Eastern Queensland into the interior of the Continent, the country becomes more arid and the streams which flow inland combine to form the Diamantina and the Barcoo Rivers, two great watercourses, which at uncertain times pour deluges of water into the depressed interior.<sup>1</sup> These great floods, after spreading over an immense extent of country, finally remain and evaporate in a system of salt lakes, of which Lake Eyre is the largest example. Into these great saline depressions flows also the drainage from the north and from the west; and the country surrounding them, except after saturation by the floods, is more like a desert than anything I can liken it to. The native communities which are spread over this tract of country (or I should perhaps say were, for they are now practically exterminated), have the Barkinji type of system.<sup>2</sup> This type also extends southwards to the junction of the Darling and Murray Rivers, and in all probability further to the west and as far south as Port Lincoln, for I find that there also occur the two primary class names *Māteri* and *Kārūrū* which obtain in the Lake Eyre country. Whether this type extends further westward than is shown upon the sketch map is unknown to me and must be left for future enquiries to decide. Since, however, the physical character of the country west of the boundary which I have marked becomes more and more desert, I anticipate that it will not be found that the tribes are on a higher social level than those around Lake Eyre.

To the eastward of the boundary which I have marked for the Barkinji type, the country is better watered and has far greater food supply for an aboriginal population, until at the eastern coast the food supply reaches its maximum. I am now speaking

<sup>1</sup> While writing the above I observed the following in one of the local journals. "The country submerged is part of the delta of the Barcoo and Diamantina Rivers."

<sup>2</sup> See p. 41.

generally, and not with reference to isolated spots which might be picked out where the coast is barren. Over this better watered and provisioned country extends the Kamilaroi type of system with a range also along the northern watershed to the boundary of South Australia, and probably beyond it to the westward. It appears to touch the eastern coast line, and to follow it to about Rockhampton, where it leaves the coast and striking southwards along the coast range follows its general direction until at about the Hunter River, in New South Wales, it reaches its most southerly limit. Thence the boundary of the Kamilaroi type strikes westward to the junction of the Murrumbidgee and Murray Rivers, where it joins the south-eastern boundary of the Barkinji type.

Thus the true Kamilaroi organisation with small variations, mainly in dialectic forms of the class names, spreads over an area in Eastern Australia at the very least 1,000 miles north and south by 500 miles east and west.<sup>1</sup>

This area comprises some of the best watered and most fertile tracts, exclusive of the rich lands of the coast line.

The limits of the still more developed type which I have provisionally called the Waramunga, I am at present unable to define, as that tribe is so far the only instance which I have recorded.<sup>2</sup>

With the exception of that part of North-Eastern Queensland where the Kamilaroi type touches the coast, the whole of the coast tracts, speaking broadly, between the Great Dividing Range and the sea, both in Queensland and New South Wales, and between the Murray River and the sea in Victoria and South Australia, were occupied by communities having abnormal types of class system which in most cases count descent through the male line. These coast tracts, taken as a whole, are the best watered and the most fertile parts of Australia, and moreover, the richest in animals and plant food for an aboriginal population.

This coincidence of advanced social development with fertility of country is not without some significance. The most backward-standing types of social organisation, having descent through the mother and an archaic communal marriage, exist in the dry and desert country; the more developed Kamilaroi type, having descent through the mother, but a general absence of the Pirauru marriage practice<sup>3</sup> is found in the better watered tracts

<sup>1</sup> The organisation is also found in Western Australia, see "*Kamilaroi and Kurnai*," p. 36.

<sup>2</sup> See p. 43.

<sup>3</sup> I have discussed the Pirauru practice at some length in a memoir communicated to the Anthropological Society of Washington, D.C., U.S.A. and em-

which are the sources of all the great rivers of East Australia; while the most developed types having individual marriage and in which, in almost all cases, descent is counted through the father, are found along the coasts where there is the most permanent supply of water and most food.

In fact it is thus suggested that the social advance of the Australian aborigines has been connected with, if not mainly due to, a more plentiful supply of food in better watered districts. Still a difficulty suggests itself to this view, because, given the existence of group marriage such as that of the Dieri tribe, one might reasonably expect that this practice of Pirauru would have been rather perpetuated than abandoned under conditions of environment which permitted the Pirauru group to remain together on one spot instead of being compelled by the exigencies of existence to separate into lesser groups having the Noa marriage. This will certainly require careful consideration, but also it must be borne in mind that the origin of individual marriage, the change of the line of descent, and the final decay of the old class organisation are all parts of the same process of social development, and that not one cause only has been at work but a number of causes which have worked together towards that ultimate result which can be seen in the most advanced communities.

I do not attempt to explain this course of development now, but only desire to draw attention to the interesting conclusion arising from an inspection of the geographical range of the types, namely, that their development has apparently a connection with improved physical surroundings. My argument

bodied in the Smithsonian Report for 1883 to which I may refer, but I think it may assist the reader hereof if I extract the following particulars: "The various Piraurus are allotted to each other by the great council of the tribe (Dieri), after which their names are formally announced to the assembled people on the evening of the ceremony of circumcision, during which there is for a time a general license permitted between all those who have been thus allotted to each other. Each Dieri man or woman is the Pirauru of some other Dieri woman or man. The relation of Pirauru may exist between men and women of different local groups or of different tribes. The relation of Pirauru may not exist between a person and those who stand to him or her in one of the following relations: father, father's brother, father's sister, mother, mother's sister, mother's brother, brother's child, sister's child, brother, sister, or any of these whom we call cousins, either on the father's or on the mother's side. Nor may it exist between persons of the same totem. The Piraurus being allotted to each other at each great council previous to the ceremony of circumcision, a man or a woman being already Pirauru, may thus acquire a new Pirauru relation in addition to these previously acquired. Hence in time a man may come to have several Piraurus. As the Piraurus cannot be of the same class name, we have here a number of men belonging to one class married collectively to a number of women of the other class. This is, in fact, a form of group marriage, and it accounts for the so-called polyandry of the Nairs." See "*Studies in Ancient History*," by Dr. F. McLennan, new edition, p. 100.

requires that the Barkinji type was once universal in Eastern Australia, and that the other types have been gradually developed from it.

*The Classes are the Equivalents of each other.*

In comparing the class divisions and totems of any great group of allied tribes, such as that comprised in the term "Kamilaroi," one finds that each component tribe has some more or less marked difference or variation either in the names of the sub-classes or in the character or number of totems. These differences are often mere dialectic variations in names, but in other cases they amount to actual differences in the structure of the system or in the animals which constitute the totem groups. When a still larger aggregate of tribes is examined the variations become larger and the differences wider. Nevertheless the general identity of structure and of the fundamental laws of the classes over wide areas, proves beyond doubt that these varying forms are substantially equivalents. I have endeavoured to put this assertion to the proof, and the result has been that the absolute identity and equivalence of the fundamental "primary classes" has been established beyond doubt in tribes along a line extending from south to north across the Australian Continent, from Mount Gambier on its southern shores to the Gulf of Carpentaria, in Northern Queensland. Similar identification embraces tribes westward from Brisbane on the east coast far into the colony of South Australia.<sup>1</sup>

This much having been done very little doubt can remain that further enquiries will establish the same equivalence throughout the whole of Australia.

In this connection I may note that the boundaries of any one class system are usually wider than those of a single tribe, and that the boundaries of a "type" of system have a still wider extent, and include aggregates of tribes which may well be termed nations, for they are bound together by a community of classes which indicates a community of descent, and which is usually accompanied by more or less frequent intermarriage.

In the following table I have shown some of the systems which are each others' equivalents. I have taken the primary divisions for comparison and in some instances also the sub-classes, while omitting for the present the totem groups, which are not essential to my purpose, and which would be of use

<sup>1</sup> I feel the strongest conviction that future investigations will shew that the equivalence of the class systems extends to Western Australia, in other words, to the whole of Australia. The four intermarrying classes have been recorded, for instance, in Western Australia by Grey and other travellers, and also by correspondents of Mr. Fison and myself.

mainly to determine some doubtful cases of equivalence. I shall separately discuss them.

In order to bring the question of equivalence within the shortest range of view, I have abbreviated the connected chain by taking those which are most typical. It must not be supposed that the tribes quoted touch each other, for some of them are hundreds of miles apart. It is the class systems which touch, and the tribes quoted are good examples of the particular social organisation to which they respectively belong.

In the table the chain apparently ends at the Belyando River, in Queensland. The fact really is that this class system is found to extend to the headwaters of the Flinders River in a slightly varied form of names as given by Mr. Edward Palmer, in his valuable paper on the Gulf Tribes.<sup>1</sup> The four-class system, of which that at the Belyando River is an example, ceases at the Maikolon tribe, which is the first tribe on the Cloncurry River having a peculiar set of class divisions composed of four male and four female names, which thence obtain to the shores of the Gulf of Carpentaria. When, however, one considers that the only difference in the two systems is that the female name with the Maikolon is distinct from the male name, that is to say, that the brother and sister have different names, while with the Belyando tribe the sister's name is formed by the addition of a feminine affix to the name of the brother, in accordance with the common usage of the Kamilaroi type, one might expect that, the laws of marriage and descent being the same, the equivalence of the two systems would be recognized where the two having the respective systems touch and intermarry. This equivalence has, however, not yet been worked out, but when it is the one link will be supplied which is required to connect the chain of equivalent systems from Mount Gambier to the Mitchell River in the extreme of Northern Queensland, a distance of over 1,600 miles in a straight line.

In some border tribes I find that the people claim the equivalent classes of each tribe, that is to say, the classes peculiar to the group to which their own tribe belongs, and also those which are equivalent to them in the adjoining tribe. For instance in the Wotjoballuk tribe of the Lower Wimmera River in Victoria, a man who is Krókitch-Wärtwüt in that tribe<sup>2</sup> told me that when he went across to the Maráura tribe at the junction of the Murray and Darling Rivers he was Kilpara, and that Gámúthch is the same as Mókwara. In the tribe which inhabited the country around Warrambool, in Victoria, the Kroki class is the

<sup>1</sup> "Notes on some Australian Tribes," by E. Palmer. "Journ. Anthropol. Inst.," February, 1884.

<sup>2</sup> See p. 63.

equivalent of Bunjil and Kunit of Waa, these being the class names of tribes which were spread over a wide extent of Eastern Victoria, excepting Gippsland.<sup>1</sup>

On the Maranoa River in Southern Queensland "a Hipai man is also Urgila, and thus calls himself Hipai Urgila, and so on with the other names."<sup>2</sup> In Southern Queensland, but to the north eastward of the Maranoa "the Ungori class names are on the one side the equivalents of the class names Hipai, Kombo, &c., and on the other side of those of the Emon tribe, namely, Urgila, Anbeir, &c."<sup>3</sup>

No doubt whatever remains in my mind that the same primary class divisions are not only identical over vast areas, and include numerous tribes and diverse dialects, but that also wherever two systems of classes touch each other the members of the adjoining tribes invariably know which of the neighbouring classes is the equivalent of their own, and therefore the individual well knows with which class his own has connubium, and he knows also, though perhaps not quite so clearly, the marriage relations of the other classes and their lesser divisions.

Two interesting questions arise from an inspection of the annexed table. The first is how marriages are arranged between, for instance, a totem of Kilpara (Example No. 3) and a totem of Ipai or of Kumbo (Example No. 4) and how the question of descent is settled in such a case. The second question is how descent is settled in marriages between Nos. 4, 5, and 6, for Nos. 4 and 6 have descent through the mother, while in No. 5 it runs through the male line. Probably in such cases the explanation will be found to be that as the woman goes to her husband's *tribe* her children follow the line of descent it counts by in the case of the totem or class which is equivalent to hers.<sup>4</sup>

### *The Primary Class Divisions were once Totems.*

I have elsewhere assumed that the class systems as we now find them are the results of a process of development by which the primary social divisions were sub-divided.<sup>5</sup> This does not attempt to explain why it is that the primary class divisions have names, which, in certain cases have no other meaning as words, while in other cases they are clearly the analogues of the totems or apparently their prototypes.

<sup>1</sup> See p. 64. Information furnished by Mr. A. L. P. Cameron.

<sup>2</sup> Information furnished by Mr. Lethbridge of Forest Vale.

<sup>3</sup> Information furnished by Mr. James Lalor, M.A., of Roma.

<sup>4</sup> The three-class systems here spoken of as equivalents are Nos. 4, 5, 6, in Table A.

<sup>5</sup> "Notes on the Australian Class Systems." "Journ. Anthropol. Inst.," May, 1883.

TABLE A.

TABLE SHOWING THE EQUIVALENCE OF THE PRIMARY CLASS DIVISIONS.<sup>1</sup>

No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
Blandik .. ..	Wotjoballuk ..	Barkinji ..	Kamilaroi ..	Kuinbara ..	Wakelbura
Mount Gambier, S.A.	Wimmera River, V.	Darling River, N.S.W.	Gwydir River, N.S.W.	Bunya Mountains, Q.	Belyando River, Q.
Kroki .. ..	Krokitch ..	Kilpara ..	Kupathin { Inai } = { Kumbo }	Kupatine { Bulgojin } = { Bunda }	Malera { Kurgila } { Banbe }
Kumit .. ..	Gamutch ..	Makwara ..	Dilbi { Muri } = { Kubi }	Dilebi { Barang } = { Turowau }	Wuthera { Wungo } { Obu }

<sup>1</sup> In this might be added Bunjil = Kroki, and Waa = Kumit, according to Mr. A. L. P. Cameron; Nos. 1, 2, 3 identified by personal enquiries by myself. No. 4 identified by Mr. Cyrus Doyle, late of Kunopia, N.S.W. No. 5 by Mr. Jocelyn Brooke, Sub-Inspector of Native Police, Queensland. No. 6 by Mr. J. C. Muirhead, of Elgin Downs, Queensland. The equivalence of Nos. 4, 5, and 6 has also been determined by Mr. James Lalor, M.L.A. of Kubberamunda, in Southern Queensland.

It might be reasonably expected that if the class systems have been subject to a process of development extending necessarily over great periods of time the changes which language underwent should leave some traces in the names of the classes, which would be likely to remain long after the language had altered. They might be perpetuated as names not having any meaning apart from the classes. This seems to me to be indicated by the fact that over a large part of Eastern Australia the names of the primary classes and sub-classes are the same under slight variations, whereas the languages of the tribes using them are more or less divergent, and often so much so as to be unintelligible to any but the tribe to which the language belongs, or to the few linguists who are found in each tribe.

In a large area of country wherein the four sub-classes are not found, the primary classes have names which convey a meaning as words independently of their signification as class names. They are in fact in such cases totems which each apply to one moiety of the tribe. Along the Darling River, up the Murray River over a large part of Eastern Victoria, and through Maneroo, in New South Wales, the meaning of the two primary class names is almost everywhere Eaglehawk and Crow. In some instances the names are the words for those birds, whilst in others there are synonyms which are more frequently used in speaking of these birds.

If the supposition is correct that in the primary divisions we may recognize the oldest forms, and in the four subdivisions somewhat newer forms of totems, it should be found that these earlier divisions show signs of antiquity as compared with the totems which are, according to this hypothesis, the nearest to the present time. This, I think, is the case. The totems are in all cases words forming part of the living language of the tribe divided by them. They are also invariably natural objects found in the tribal country, and could not in some cases have been brought as totems by the people when migrating in the past from some distant part of the Australian Continent where such animals do not occur.<sup>1</sup> In such migrations, which must have taken place since totems have been used, certain of them must have suffered by disuse, or substitution by the absence in the new country of objects to which the names belonged. The totem name would be either lost altogether or some representative animal would be substituted.

In the case of a primary or secondary division the totem name might continue to exist as a name merely, as for instance,

<sup>1</sup> Of course such totems as fire, water, rain, wind, the heavenly bodies, &c., are not included in my remarks.

the names Dilbi and Kupathin, Krokitch and Gamutch, Malera and Wuthera.

The class name is general, the totem name is in one sense individual, for it is certainly nearer to the individual than the name of the moiety of the community to which he belongs. The more proximate names would certainly be the most easily modified, the more distant names would be those most easily lost, or else would linger on unchanged.<sup>1</sup>

In all these cases, however, it is necessary to bear in mind that much would depend upon the line of descent when such changes took place. I have observed that changes in the class systems from the normal type are always far more apparent where there is agnatic descent. Where this comes in the old equilibrium seems to be profoundly disturbed. The primary class divisions may be lost (Narrinyeri) or the totems may have almost disappeared (Woiworung) or both may be wanting, leaving only the abnormal totems the "man's brother" and the "woman's sister" (Kurnai),<sup>2</sup> or finally the whole class system may have disappeared (Coast Murring and Chepara).

Agnation is clearly connected with these later changes, but some other cause must be sought for these earlier changes which divided and again sub-divided the community under the law of descent through the mother. At present I cannot see any more reasonable cause than a profound feeling in the aborigines against close intermarriage, or as they put it, against "mixing the same blood."

This feeling is a very strong and living one in the Australian savage. No one will be prepared to contend that it is an innate one. It has been arrived at by their ancestors through a course of reasoning which has satisfied them. Anthropologists will have to modify their views as to the reasoning powers of savages. They do reason, and granting their premises, their conclusions are strictly logical and correct. Those who have had much to do with savages, and have got into their confidence

<sup>1</sup> I have at present no evidence bearing directly on the change of totem name, but I am indebted to Mr. J. C. Muirhead for a case in which the tribal (local) name has been changed. He says in speaking of a tribe now called "Mūki-būra," which was located at Natal Downs and at the Cape River, "I am not able to state how this tribe came by its name or how the word Munki came to mean sheep, but the following instance of an alteration in a tribal name may illustrate the way in which such changes come about. There is at present a tribe living about 60 miles south of Clermont having the name Wandali-bura. It was formerly called Dūring-bura when inhabiting Gregory Creek. For some reason it discarded this place, probably because a Native Police barracks was formed there, and is now called Wandali-bura from Wandali, = to loose, or to abandon or throw away. At one time the Wakelbura (Wakel = eels) tribe was called Orbūl-bura, from *orbūl*, a tuber found at the root of a small water lily."

<sup>2</sup> See page 50.

find that they are perfectly capable of reasoning within the limits of their experience.

I think, therefore, that there is reason for believing that originally the primary class divisions were in fact totems, and it might be well to abandon the terms "class divisions" and "sub-classes," and, as suggested to me by Mr. Fison, to adopt instead the terms "major" and "minor totem."

*The Types under which the Class Systems may be arranged.*

In a former communication I suggested certain formal delineations of the class systems. I have found these delineations so very useful in working out the new details which have from time to time come into my hands, that I propose to follow out the same plan in this paper also. The formulas, if I may be permitted to use that term, are very helpful in bringing into view the similarities and the differences of the systems, and thus also to enable one to mark what seems to have been the process of development. Thus working, the arrangement of the various class systems falls naturally under several "types," and for simplicity I omit in them the totem groups in each. A reference to the map (Pl. V) will aid the reader in following my statements in this section.

*The Barkinji Type* includes all those systems which have two primary classes and a group of totems belonging to each, and with descent counted in the female line. Abbreviating the tabulated statement of the system<sup>1</sup> it will be graphically formulated as having a community consisting of

$$A + B,$$

<sup>1</sup> As a good example of this type of class system, I give the following which extends over the Darling River from Menindie to Fort Bourke. I have given the totems in their English as well as aboriginal forms :—

Primary Classes.						Totem.
Mukwara .. .. .	{					Bilyara—Eaglehawk.
						Tirlta—Kangaroo.
						Barkunia—Bandicoot.
						Uleburi—Duck.
						Karni—Lizard.
Kilpara' .. .. .	{					Kaltli—Emu.
						Tura—Carpet snake.
						Namba—Bone fish.
						Birnal—Iguana.
						Bananya—Paddy melon.
						Yerilpari—Opossum.

where A and B represent respectively the two exogamous intermarrying moieties of the tribe.

In the Barkinji tribe, and in others which extend over a vast space of inland Australia, there is descent through the mother.

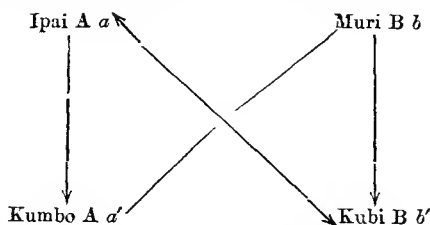
*The Kamilaroi Type.*—In a former memoir I have given reasons for believing the class systems of tribes which have the "Kamilaroi organisation" to be a development of the simpler forms of the Barkinji type. The Kamilaroi type of system may be shortly described as one in which a community divides into two primary classes, with four sub-classes, and with groups of totems corresponding to them. Descent in this type is generally in the female line. There are, however, exceptions which have descent counted through the father, and which are of sufficient range to form a separate type.

For an example of the Kamilaroi type of system I may refer the reader to previous papers.<sup>1</sup> The Kamilaroi type can be shown graphically by the subjoined formula.

$$A \left\{ \begin{matrix} a \\ a' \end{matrix} \right. + B \left\{ \begin{matrix} b \\ b' \end{matrix} \right.$$

While in the Barkinji type the descent runs direct in the female line through the class names, it appears in the Kamilaroi type, when one merely regards the names of the sub-classes, not to run in the direct line. Yet when the two diagrams of the descents are compared the principle underlying both is found to be the same.

I have found the subjoined diagram very useful in bringing before the mind's eye in a concise form the rules of marriage and descent in the Kamilaroi type of system. I give it in full for the four classes with the letters attached corresponding to the names as used in the condensed formula of this type. The arrows point to the direction in which the marriages and descents run in the one case used in the diagram, namely that of the two intermarrying classes, Ipai and Kubi.



<sup>1</sup> "Notes on the Australian Class Systems," "Journ. Anthrop. Inst.," May, 1883; "Notes on some Australian Tribes," E. Palmer, "Journ. Anthrop. Inst.," February, 1884.

Discarding the names and using the letters only, the sub-joined diagram of the marriage of Ipai with Kubitha, and the corresponding descent can be compared with the marriage and descent in the Barkinji classes which are their equivalents.



The line of descent in both runs in the same manner through the female line in the primary classes, but where the sub-classes are developed, it runs through that sub-class which with the sub-class of the mother represents her primary class division. The new arrangement is an ingenious restriction upon marriage, thus forbidding one half of the intermarrying class in its female members to any individual man, and moreover in thus removing a moiety it removes at the same time the man's daughter, who otherwise would be of that class from which he could lawfully take a wife. It removes from the possibility of marriage with him all those women who under the "group relationship" system must be counted as his daughters.

*The Waramunga Type.*<sup>1</sup>—Another most peculiar and interesting class system has come under my notice. The community is divided into eight intermarrying classes. That is to say, into four times the number of those of the Barkinji, and twice those of the Kamilaroi type. As this type of class system is a new one to me, and as much interest attaches to it, I shall enter upon some fuller details, showing how the eight class names are related to each other. I have to thank Mr. Fison for most valuable aid in working out this system from the data furnished by Mr. Giles.

The information given by Mr. Giles does not disclose anything showing that there are any other class divisions beyond the eight to be mentioned, or that there are any totems attached to them. This, however, does not in any degree prove them absent, but only perhaps that they have been overlooked. The fact that the existence of the primary class names Dilhi and Kupathin escaped the notice of many of our correspondents is an instance enforcing extreme caution in drawing conclusions from negative evidence.

<sup>1</sup> Obligingly communicated by Mr. Allan M. Giles, of Tenant's Creek, S.A.

The Waramunga class names are as follows :—

<i>Male.</i>	<i>Female.</i>
Akamara.	Nakamara.
Ampajona.	Tampajona.
Ungerai.	Namajili.
Apononga.	Napononga.
Opala.	Narila.
Tungeli.	Nungeli.
Kabaji.	Kabaji.
Apongardi.	Napongardi.

That is to say, the sister of Akamara is Nakamara, of Ampajona is Tampajona, and so on with the other names, excepting Ungerai.

The first matter to be disposed of is how the above eight male and eight female classes are to be placed with each other under the Waramunga laws of marriage and descent.

As to this, Mr. Giles gives full information which I have tabulated as follows, assuming that descent is in the female line, as is most frequently the case in Australian tribes.

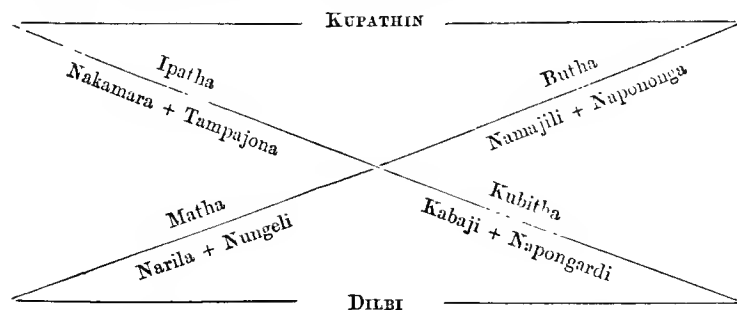
Female			Marries			Children are
Nakamara	..	..	Kabaji	..	..	Ungerai and Namajili.
Tampajona	..	..	Apongardi	..	..	Apononga and Napononga.
Namajili	..	..	Opala	..	..	Ampajona and Tampajona.
Napononga	..	..	Tungeli	..	..	Akamara and Nakamara.
Narila	..	..	Ungerai	..	..	Apongardi and Npongardi.
Nungeli	..	..	Apononga	..	..	Kabaji and Kabaji.
Kabaji	..	..	Akamara	..	..	Opali and Narila.
Napongardi	..	..	Ampajona	..	..	Tungeli and Nungeli.

The arrangement of the above in two groups, A and B, can be now deduced from this table, on the assumption that they are sub-divisions of two primary groups. I discard the male names, and take the female names as representing the classes. I commence with Nakamara A, who marries Kabaji; therefore Kabaji is of the class B, and their child Namajili is of the class A. Namajili A marries Opala, who is therefore B, and their child Tampajona is A also; Tampajona A marries Apon-

gardi B, and their child Napononga is A. Finally Napononga A marries Tungeli B, and their child is Nakamara A, being the name from which we started. Here, therefore, we have the following tabulated arrangement, which shows the eight intermarrying classes in two groups, and they also fall into couplets as follows:—

A	{	1 Nakamara.	B	{	3 Narila.
		i Tampajona.			iii Nungeli.
	{	2 Namajili		{	4 Kabaji.
		ii Napononga.			iv Napongardi.

This arrangement is based upon the fact that, for instance, Namajili is the child of Nakamara, but Nakamara is not the child of Namajili, as would be the case were we treating of two sub-classes of the Kamilaroi type, but is the child of Napononga. The explanation is that Nakamara + Tampajona are equivalent to one of the four sub-classes of the Kamilaroi type. For the sake of illustration this may be assumed to be Ipai. For in a discussion of the principles underlying these systems the equivalent names are of little moment so long as the relative positions of the several names are preserved. It is immaterial whether we assume Krokitch = Kilpara or to Mokwara so long as we treat the names as merely expressing the rule that the class A marries B and *vice versa*. On the above assumption that Ipai may be taken as representing Nakamara + Tampajona, the following diagram may be drawn out, which at a glance discloses the relation of the Waramunga classes to those of the Kamilaroi and Barkinji types.<sup>1</sup>



<sup>1</sup> I desire distinctly to say that at present I have no knowledge which of the Waramunga couplets = Ipai. The future may bring information to connect the Waramunga with some other system whose value is determined.

Under female descent the individual reappears in the Barkinji type of system in each generation, and in the Kamilaroi type in the third generation.

The above tables make it now possible to ascertain what the results would be in an inquiry to ascertain the reappearance of the individual class name in the Waramunga type. It is immaterial which name is selected as all work alike. I take that first to hand, namely, Nakamara, and I discard the names, and, for the sake of simplicity use only the letters and numbers attached to the formal table, premising that, as before,  $m$  = male and  $f$  = female.

	$f$	A	1
	$m$	B	4
$m$ and $f$	A	2	
	$m$	B	3
$m$ and $f$	A	i	
	$m$	B	iv
$m$ and $f$	A	ii	
	$m$	B	iii
$m$ and $f$	A	1	
	&c.		

The individual class name  $f$  A 1 (Nakamara) only returns therefore in the fifth generation.

The Waramunga class system seems to me to add very great weight to my former argument that the extension of the class system into the Kamilaroi type was intentional, and not the possible result of accident, but for the object of preventing those intermarriages which the aborigines still regard as incestuous.

#### *Abnormal Types with Descent through the Mother.*

There were once tribes spread over the greater part of Western Victoria; indeed probably also over the adjacent districts of South Australia along the coast to the River Murray mouth, which had a social organisation of a peculiar type.<sup>1</sup> So far as I have been able to collect data, the various tribes referred to were not all upon the same level as regards their class systems. In some it seems to have been more complete than in others.

<sup>1</sup> See p. 60.

The difficulty of the inquiry is increased by the decadence of these tribes. Some of them have completely died out while others are represented by miserable remnants.

I find the Wotjobaluk tribe of the Wimmera River to be the best example of this peculiar type.

This tribe occupied a tract of country on the eastern side of the Wimmera River, and extending northwards to the furthest limit of the flood waters beyond Lake Albacutya. According to my informants its class system was the same as that which extended over other tribes located in the country from the Avoca River, westward far into South Australia towards the Lower Murray, and from the limits of the Wotjobaluk country southwards to the sea-coast. It is certain that the northern limits of this system of class names was about the Murray River, where the names Kilpara and Mokwara obtained, and to the east where the class names Bunjil and Waa were found.

I have given a detailed account of the class divisions and totems, and therefore need only now refer the reader to it, and to say further that they can be delineated by the sub-joined formula, which shows the resemblance and the difference to the normal types.

$$A \begin{Bmatrix} a \\ a' \\ a'' \end{Bmatrix} + B \begin{Bmatrix} b \\ b' \\ b'' \end{Bmatrix}$$

In this type, therefore, there have been developed six sub-classes instead of the four of the Kamilaroi, or the eight of the Waramunga, but there has not been attached to them the peculiar alternating descents, which is their characteristic. It seems open to conjecture that in this form we may see only the Barkinji type with totems in a highly developed form. I shall have occasion to refer to this in a subsequent section.

### *Systems counting Descent in the Male Line.*

All the tribes of which I have so far spoken in this section count descent in the female line. There yet remain, however, other tribes which count it through the male line. As before, I commence with that type which is the simplest.

A class system having two primary divisions only with totem sub-divisions obtained over a large part of Eastern Victoria (excluding Gippsland) and is best known to me in the form in which it occurred in the country north and south of the Yarra River, with the Woiworung tribe. The two primary intermarrying divisions were Eaglehawk (Bunjil) and Crow (Waa) and there was one totem attached to the Crow division. Descent

was counted through the father, for the children of a Bunjil man and of a Waa woman were Bunjil, and of a Waa man and of a Bunjil woman were Waa. A marked distinction between this and the Barkinji system, which it otherwise resembled, excepting in the line of descent, was that the two major totems were collected into certain localities, thus forming "local totem clans," while with the Barkinji system the members of the two class divisions were scattered throughout the whole tribal territory, members of each division, and of course also of the totems, being formed in the several local tribal groups. In the Woiworung tribe, on the contrary, in certain localities all the men and the children were Bunjil, the wives being Waa, whilst in certain other localities the reverse was the case. There is in this a remarkable instance of a profound alteration in the social arrangements connected with the change in the line of descent, for it is evident that this class system is an altered and partly decayed form of the Barkinji type.<sup>1</sup> The class system of the Murring of the Maneroo tableland was of this type but with less departure from the Barkinji form. It had two primary class divisions, Eaglehawk (Mérung) and Crow (Yuckembrük), each with a numerous group of totems. Descent was counted in the male line and the child took the class and totem name of its father.<sup>2</sup> The members of the two classes were not aggregated into local totem clans, as with the Woiworung, but were as with the Barkinji distributed throughout the tribal territory.

The Murring of the coast line had, however, with male descent lost the class divisions, and the totems only survived as magical names which were transmitted from father to son.<sup>3</sup>

Examples of class systems framed after the Kamilaroi type, but with male descent, are found in tribes over a considerable range of country in South-Eastern Queensland. Of these the Kaiabara tribe of the Bunya Bunya Mountains is a good example. I subjoin the tabulated system so far as it has yet been worked out.<sup>4</sup>

<sup>1</sup> "On the Migrations of the Kurnai Ancestors," "Journ. Anthropol. Inst.," May, 1886.

<sup>2</sup> In "Australian Ceremonies of Initiation," p. 7, "Journ. Anthropol. Inst.," May, 1884, I stated that the Ngaryo class divisions had uterine descent. This was erroneous, as I afterwards observed.

<sup>3</sup> Yet traces of the old law survive. No person may marry another of the same name.

<sup>4</sup> From data kindly furnished by Mr. Jocelyn Brooke, Sub-Inspector of Native Mounted Police, Queensland.

KATBARA CLASS SYSTEM.

Primary Divisions.	Sub-classes.	Totems.
Kubatine .. .. .	Bulkoin .. .. .	Carpet snake.
	Bunda .. .. .	Native cat.
		Flood water.
Dilebi .. .. .	Baring .. .. .	Turtle.
	Turowain .. .. .	Bat.
		Lightning.

An inspection of this table shows no difference from the normal Kamilaroi type excepting in the names of the sub-classes and of the totems.

It is only when one examines critically the rules which govern marriages and descents that the distinctions come into view. To show this I now give a tabular view of the marriages and descents.

Male	Marries	Children are
Bulkoin .. .. .	Turowain .. .. .	Bunda.
Bunda .. .. .	Baring .. .. .	Bulkoin.
Baring .. .. .	Bunda .. .. .	Turowain.
Turowain .. .. .	Bulkoin .. .. .	Baring.

Using the same formula for this system as for that of the Kamilaroi type, but under the rules to be deduced from the above table, the subjoined diagram of the marriages and descents can be drawn out, and for comparison I have added that illustrating the Kamilaroi system.

*Kamilaroi.*  

$$\begin{array}{c} m \ A \ a \\ f \ B \ a \\ \downarrow \\ m \ \text{and} \ f \ B \ b \\ \hline \&c., \end{array}$$

*Katbarra.*  

$$\begin{array}{c} m \ A \ a \\ f \ B \ a' \\ \downarrow \\ m \ \text{and} \ f \ A \ a' \\ \hline \&c. \end{array}$$

From these diagrams it is clear that with the Kaiabara descent is in the male line, for the children are of the same primary division as their father, and of that sub-division which, with his own, is equal to the primary division. In the Kamilaroi type the children belong to the primary division of their mother and to the sister sub-class of that to which she belongs. I think that we may safely assume that the Kaiabara system is a development of that of the Kamilaroi type which surrounds it on the north-west and south, and of which it is the recognised equivalent.

*Abnormal Tribes with Agnatic Descent.*

Besides the tribes which I have now mentioned, and which have complete class systems, or traces of class systems, there are others which so far as can yet be made out have no class systems or totems. An instance occurs on the southern coast of Queensland in the Chipara tribe. Careful enquiries by a competent correspondent in that district<sup>1</sup> seem to establish the fact that this tribe had neither class names nor totems, for the aboriginal informant upon whom my correspondent chiefly relied was acquainted with the Kamilaroi class names, and distinctly stated that in his own tribe there were none such. This seems also to be further confirmed by the statements of another correspondent<sup>2</sup> on the same coast line but somewhat further to the northward, who informs me that he knew of no such class names as those which obtain to the westward excepting in the case of a few individuals who bore them as personal names. This suggests that in these two tribes (Chipara and Turibul) the class systems had become extinct; just as the class system of the Kurnai had become extinct, and as that of the Coast Murring had also almost disappeared. It is remarkable that all these are instances of coast tribes.

The occurrence of individuals bearing class names in a tribe which did not have them as class names, is paralleled by the occurrence of a family having the name of Bunjil on the eastern side of the Bidnelli country in Eastern Gippsland, where this class name was otherwise unknown.

As a contribution to this part of the subject I have much

<sup>1</sup> Mr. James Gibson, J.P., of Stanmore, to whom I am indebted for unwearied assistance in a difficult enquiry.

<sup>2</sup> Mr. James Petrie, of North Pine River, who was intimately acquainted with the Turibul tribe from boyhood, and who as being affiliated to it accompanied the Turibul to the great Bunya Bunya feasts, which were held inland at certain times when the harvests of the fruit of the Bunya Bunya (*Araucaria bidnelli*) occurred.

pleasure in being permitted to add as an appendix a valuable critical analytical examination by Mr. Fison of the data given by Bishop Salvado as to the "names" of the aborigines near New Norcia in Western Australia. The original data will be found in a paper presented to the Legislative Council of Western Australia by the command of the Governor of that Colony in 1871. I endeavoured to obtain further information from Bishop Salvado, but I regret to say that my communication remained without reply.

*The Totem Divisions.*

The word "totem" which has been adopted from the well known nomenclature of the North American Indians, refers in this case to certain names which are borne by certain groups or divisions of the social organisation of the aborigines of Australia. This name which is borne by a whole group, the members of which are considered as being of the same blood and descent, is of course borne by the individual also. It is inherited from the mother or from the father according as descent is counted in the female line or in the male. Thus, taking an instance from the Wakelbura tribe of the Belyando River in Queensland,<sup>1</sup> where a man of the primary class Malera, of the sub-class Kurgila, and totem Small Bee<sup>2</sup> married, he would take to wife a woman who was of the primary class Wuthera, of the sub-class Obu, and of the totem Carpet Snake. The children would be of the totem Carpet Snake, but in accordance with the rule of the sub-classes which I have before referred to, would not be of the mother's sub-class Obu, but of the sister sub-class to it, namely, Wongo. The children, therefore, inherit the primary class name and totem name from their mother. When as in the Kaiabara tribe descent is in the male line, the rule is exactly analogous, *mutatis mutandis*.

The individual bears the totem name as one of a group to which the name is common, but besides this he has of course his own proper individual name, which, however, is often in abeyance because of the disinclination to use it, or even to make it generally known lest it might come into the knowledge and possession of some enemy, who thus having it might thereby "sing" its owner—in other words, use it as an "incantation."

Where there are two primary class divisions without four

<sup>1</sup> Mr. J. C. Muirhead, of Elgin Downs, who has an extended and intimate knowledge of the customs of these tribes.

<sup>2</sup> I have throughout given the English equivalents for the totem names.

sub-classes, as in the Barkinji type, it becomes evident that the totems are lesser divisions which form two groups, each of which as a whole is equal to one primary division. I only know of one case where the same totem occurs in both of the primary divisions, and I am not certain whether or no in this case it is an instance of two nearly allied birds, one of each belonging to a class. Where the four sub-classes are found the totem group which represents one primary class also represents its sub-classes in common. Thus, again taking the Wakelbura tribe as an example, the totem Carpet Snake belongs to both Wongo and Obu, these being the sub-classes equivalent to Wuthera, and so also with the other totems.

There is not any definite number of totems to each primary class; on the contrary, it is often found on enquiry that one class will have many more totems than the other, and that moreover some one totem will be a very numerous one as to its members—a “very strong one” as I have heard blackfellows express it—while another totem will be borne but by few people. This may arise out of several causes. There is the possibility in all cases, where the investigator has to make his enquiries from a few native informants that he may not have had given to him all the totem names, for naturally the informant will remember and give those totems with which he has most connection. Thus he will name his own and those of his father and mother, and of the group of women one or more of whom he may lawfully marry, and of those people who form the local group to which he himself belongs. The relative number of the totems may become unequal, for it is quite clear that a totem might be driven out of some district or even be extinguished by a blood feud, for in such a case all the “totems-men”<sup>1</sup> would have to assist each other and equally abide the result.

The laws which govern the marriages of the two primary classes, and the descents of the children in them, also find expression in the laws governing the totems. But there are variations in the application of the exogamous rule. In all cases a person is prohibited from marrying another of the same totem, or even of one of the totemic sub-divisions of the same primary class. The fundamental law governs both cases. But the general law which permitted him to marry a woman of the other half of the community did not permit him in all cases to take to wife any woman of the other moiety, but frequently he was restricted in choice to a woman of some one totem. Thus, still further restrictions upon marriage arise. Starting from the

<sup>1</sup> “Totems-men” may I trust be used in analogy with “clansmen.”

earliest restriction, namely, that of the Barkinji type of system, where the choice of a wife is confined to one moiety of the community, the successive sub-divisions into sub-classes and totems produces a further series of restrictions, independently of those which follow out of the action of the wide kinships which arise from the system of group relationship of these aborigines, based upon the original division of the community into two intermarrying groups, each of which had a structure which is now represented by the Pirauru groups of the Dieri and other tribes near Lake Eyre.

It is interesting to note that the totems seem to be much *nearer* to the aborigines, if I may use that expression, than the primary classes. In many cases a man may not kill and eat his totem, and it is a serious offence for him to kill that of another person with intent to injure him. The totem is very generally supposed to warn its human brother of impending danger. The totems give occasion for certain magical dances at the initiation ceremonies; at the Jeraeil of the Kurnai the totem, "the man's brother," is invoked over the novices.

The folk lore of the tribes is full of stories about the totem animals and their doings. In these stories animals are the actors, but they talk and act as would blackfellows. The narratives often begin in this manner: "A long time ago when the animals were all men," and with the Kurnai, indeed, such animals are recognised as having been their ancestors, the "Muk-Kurnai."<sup>1</sup>

The Kurnai distinguish between those animals which were "Muk-Kurnai," and those which are only "Jeak" or "meat," and no more. It is not easy to recognise with certainty from these stories whether the actors in them are thought to have been animals or men, whether it is the animals which were anthropomorphic, or the men who were theriomorphic. They are men and yet are animals, this is all that can be said, excepting that in most cases they were more powerful, both physically and magically, than men now are.

It is not to be said, however, that all such tales relate to the totemic animals, for some relate to the supernatural beings also with whom the blackfellow has peopled the land, the water, and the sky.

I cannot say whether these tales have been invented to fit the existing totems, or whether totemy and these fables have had a simultaneous growth. Perhaps the latter is the most probable; and this is certain, that when the aboriginal legends purport to account for the origin of totemy, that is to say, the

<sup>1</sup> "Great-Kurnai."

origin of the social divisions which are named after animals, it is not the totems themselves to whom this is attributed, nor the blackfellows, but it is said the institution of these divisions and the assumption of animal names, was in consequence of some injunction of the great supernatural being, such as Bunjil, given through the mouth of the wizard of the tribe.

Very many of these tales about animals have been recorded elsewhere by other writers on Australian subjects, and it will suffice if I now complete these remarks by recording several which are characteristic.

Among the Muk-Kurnai, or ancestors of the Gippsland blacks, the Crow holds a prominent place, and it figures in one of their favourite legends which recounts how Baukan nearly succeeded in robbing the Kurnai of their fire.

The tribe being engaged fishing, Būlūn, Baukan, and their son Buluntūt,<sup>1</sup> coming to the camp, took away all the fire, and began to ascend to the sky by way of Wilson's Promontory. Reaching the summit, Buluntūt threw up a string, made of kangaroo sinew, which stuck fast to the sky. He then tested its strength by pulling on it, when it broke. He then tried a cord of the sinews of the Black Wallaby, which likewise broke. Finally, he threw up a cord of the sinews of the Red Wallaby, which held fast. Then saying to Bulunbaukan, "Hold on round my neck," he began to ascend the cord, Baukan carrying the fire.

Now, while this was going on, Wagūlan, the Crow, had observed the robbery of the fire by Baukan, and went in haste to tell the Brown Hawk. He, hastening after Baukan, found the fire thieves climbing up to the sky by the cord which Buluntūt had thrown up, and he hereupon swooped on them, and striking violently with his wings, caused Baukan to let fall the fire. This falling to the ground was seen by Bembrin (the Robin), who carefully blew it into a flame, and smearing some of the fire over his breast, has remained thus marked to this day. In this manner the Kurnai regained their fire.

Another legend of the Muk-Kurnai says how that long ago there was a great drought. All the waters were drying up, and the little that was left was drunk up by Tidelik (the Frog). The Muk-Kurnai being reduced to great straits assembled, and endeavoured to persuade Tidelik to give them the water back. But he refusing, they next tried to make him laugh, so that he no longer could keep his mouth shut, and the water would run out. Some tickled his sides, and the Eaglehawk, the Crow, and all the others danced before him. It was of no avail until at

<sup>1</sup> Bulun = two. Baukan is a supernatural dual female being.

length Noyang (the Conger Eel) came up with lakeweed hanging round him, and danced on his tail. The sight was so ludicrous that Tidelik laughed in spite of himself; the water all ran out of his mouth, the lakes and rivers became filled again, and the Muk-Kurnai were saved from perishing by drought.

A Wotjobaluk legend is as follows. The portion which I give is part of a much longer story, all of which relates to animals:—

Two Brambramgal, who were the maternal uncles<sup>1</sup> of Doan (*Petaurus*?), were walking about and met an old man called Gertük (Mopoke), who had a water-hole of his own in the fork of a tree, which no one knew of, and which he would not show to any one. The Brambramgal watched him, and at last saw him go to the tree and drink. Then they said, "May the fork of this tree close up over our grandfather!"<sup>2</sup> The tree closed up and shut up old Gertük with his dog in the hole. Soon after Binbin (the tree-creeper) with two friends came that way and went running up round the tree. Hearing a voice somewhere, they said, "Where are you?" "Here I am," replied Gertük, "shut up in this tree." Binbin took his tomahawk, and began to knock on the tree to find out where to cut. "Don't cut there" said Gertük, "my forehead is there," "don't cut there, it is where the top of my head is," and so on, until Binbin got cross and cut a hole just where Gertük's breast was and cut him badly. He pulled him out and laid him on the ground. He was bleeding and nearly dead, but his dog came and licking his wound made him well again. The mark in the bird's breast is where the wound was.

Then Gertük being very angry got a kangaroo skin bag and went about collecting whirlwinds until he had it full. Then he tried it and finding it was strong enough to blow the trees out of the ground he went in search of the Brambramgal whom he found near Mükbili.<sup>3</sup> He opened his bag and let out a whirlwind. The elder Brambramgal caught hold of a light wood tree<sup>4</sup> which stood fast, but the younger got hold of a pine tree<sup>5</sup> and has been blown away with it to a place called Waitwait Kalk. Being alarmed by hearing the noise of the bittern in the lagoons he went away further down the Wimmera River. Meanwhile the elder brother felt very uneasy about him and went for their mother. She, pressing her breast, sent the milk like a rainbow falling at the place where the younger brother

<sup>1</sup> Jarambūp = mother's brother.

<sup>2</sup> *Wine balebūk jadtjira ngapa ngaurak.*  
Let it close up fork grandfather our.

<sup>3</sup> A place to the eastward of Dimborla shown on the maps as Muckbilly.

<sup>4</sup> *Acacia melanorhylon.*

<sup>5</sup> Probably *Callitris verrucosa*.

then was. It was very far off. She and the elder Brambramgal travelled all day and on the following morning she again pressed out some milk which fell nearer to them, and so on day by day until it fell quite near. Then the elder Brambramgal said "Wait here, mother, while I go and look for my brother." He looked about and found where his brother had been eating a duck, and at length he came close to him but his younger brother did not know him. The elder brother took care of him for several days until a snake bit him and he died. Then his brother being very sad said, "I wish that gum tree were my brother!" He cut it down and chopped a figure of a man out of it, saying continuously, "Get up and be my brother!" until the log got up and became a man and recognized his elder brother. Then the two went far away to the westward and lived in a large cave until after a time they went still further no one knows where.

The Woiworung had the following legend:—

The Native Companion<sup>1</sup> and Emu were black people. The Emu did not like to see the Native Companion with so many children. So he took all his own away and hid them except one. Then he went to the Native Companion and said, "Why do you let yourself be troubled with so many children—see how comfortable I am with only one." The Native Companion replied "Yes, it is very well for you with only one—children are a great trouble—only what can I do—I have so many?" "You had better kill all but one," said the Emu. "I don't want to kill my children," said the Native Companion. "You take my advice and you will be much better off," replied the Emu. So the Native Companion killed all his children but one. Then the Emu brought all his out and said, "See how much better off I am than you!" Since that time the Native Companion has only one child.

*The Abnormal Totems.*—Besides what may be called the regular or normal totems there are others which are very peculiar and exceptional. When working out the beliefs of the Kurnai I found that their only existing totems were two, one being confined to the males and the other to the females. These totems, in fact, divided the community into two moieties of different sexes, and it was only after I had obtained a far wider view of the class systems of the tribes of South-Eastern Australia, that I came to see that these Kurnai totems are in fact common under other designations or under other representative animals to all the tribes mentioned.

In the Kurnai tribe the Emu Wren,<sup>2</sup> and the Superb Warbler<sup>3</sup>

<sup>1</sup> *Grus australasianus*.

<sup>2</sup> *Stipiturus malachurus*.

<sup>3</sup> *Malurus cyaneus*.

are respectively the "man's brother" and the "woman's sister." The Emu Wren is held to have been among the Muk-Kurnai of olden times, when, according to the phrase commonly used by the blacks, the animals were all men.<sup>1</sup>

The high consideration given to the Emu Wren is abundantly shown by the fact that its name is invoked at the Jeraeil, or initiation ceremonies, over the novices for the purpose of infusing into them the due amount of manly virtues as the Kurnai see them to be.

Taking Gippsland as a starting point, I find in the coast country extending thence to Sydney that the Emu Wren is the man's brother but associated here with the Bat in the same relation, while the "woman's sister" is the Treecreeper.<sup>2</sup>

Totems of this kind no doubt extend far round the east coast, for I find that the "woman's sister" was known at Port Stevens,<sup>3</sup> and I have lately heard of it at Brisbane.<sup>4</sup>

Proceeding westwards from Gippsland, totems of this kind are found to have existed among the Woiworung. In this tribe these totems were double, there being the Emu Wren and the Bat for the men, and the small Nightjar and the Superb Warbler for the women. Probably the same totems obtained among all the tribes of which the Woiworung were representative.

The Wotjobaluk of the Wimmera River had also these totems and thus show what were the beliefs of tribes over a vast area of country covered by the class names Krokitch and Gamutch. In this tribe the man's brother was the Bat and the woman's sister was a small Nightjar.

With these people these were real totems although of a peculiar kind. They were called "yaur" or flesh, or "ngirabül" or "mir," just as were the totems proper. The only difference was that the Bat was the brother of all the men while any one totem was the brother only of the men who bore it as their totem. The Wotjo said that the Bat was the man's "brother" and that the Nightjar was his "wife."

The curious custom of fighting about these totems seems to have prevailed wherever they were found. I have narrated elsewhere the Kurnai fights about them.<sup>5</sup> The Wotjobaluk give

<sup>1</sup> There were also at that time animals which were women—for instance, the Superb Warbler and the Leatherhead (*Tropidorkhynchus corniculatus*) whose constant chattering is appealed to by the Kurnai in support of their statement that it was once a woman. There are others, but these will suffice.

<sup>2</sup> Probably *Clinacteris scandens*.

<sup>3</sup> Mr. W. Scott, writing to me about the Port Stevens' blacks, mentions "a Woodpecker, the black gin's *gimbi*, or friend. The above mentioned Treecreeper is often called "Woodpecker."

<sup>4</sup> Mr. James Petrie.

<sup>5</sup> Kamilaroi and Kurnai, p. 201.

also a good illustration of this practice. They held that "the life of Ngününgünüt (the Bat) is the life of a man and the life of Yärtatgürk (the Nightjar) is the life of a woman," and that when either of these creatures is killed the life of some man or of some woman is shortened. In such a case every man or every woman in the camp feared that he or she might be the victim, and from this cause great fights arose in this tribe. I learn that in these fights, men on one side and women on the other, it was not at all certain which would be victorious, for at times the women gave the men a severe drubbing with their yamsticks while often women were injured or killed by spears, although they were clever at turning these aside or even breaking them with their own peculiar weapon.<sup>1</sup>

Such fights also took place among the Murring and according to Mr. Petrie also at Brisbane. Thus it is seen that this curious belief in the two totems and the fights connected with this belief extended over a large part of South-Eastern Australia, and I doubt not that on enquiry it will be found to have a still wider range.<sup>2</sup>

Among the legends current among the tribes which were treasured up by the old men and repeated to the young people there are also some having relation to these totems which I may as well record.

These legends as well as those already given were told to me by old men of the several tribes, and I have endeavoured to record them as much as possible in the manner in which they were repeated.

The Coast Murring say that "long ago, when the earth was bare and as hard as the sky and without trees, Kaboka (the Thrush) by his magic caused a flood to cover the land by which all creatures were drowned except a few of the animals which crawled out into the dry ground and became human-like creatures. They were without sex until the Emu Wren differentiated them into men and women by a curious surgical operation."

The Wotjbaluk also have a legend which relates that formerly the inhabitants of the earth were like unto human beings, and the Bat feeling lonely made the difference in sex and thus having obtained a wife, made a fire by rubbing a stick across a log.

<sup>1</sup> Mr. Fison tells me that in one or two of the Fijian tribes there are occasions on which the women fight with the men. The women are allowed to use sticks and often inflict ugly wounds, while the men may only retaliate by slinging balls of clay at them from the end of a stick.

<sup>2</sup> Mr. A. L. P. Cameron speaks of these abnormal totems among the tribes in South-Western New South Wales in "Notes on some Tribes in New South Wales."—"Journ. Anthropol. Inst.," vol. iv, p. 344.

With the Woiworung the Bat (Balaiŭng) seems to have been an adversary of Bunjil, and the following is a legend which I have heard.

"The Bat is the brother of all the men. A long time ago, the whole country was covered with long grass so that people could not walk about over it. Bunjil said to the Bat 'Come and be with us on our side.' But he replied 'No, your's is a very dry ground, you ought to come over to me.' Bunjil said, 'Very well! then I will leave you alone.' He then sent his two men Djurt Djurt<sup>1</sup> and Thara<sup>2</sup> to burn the whole of the Bat's country, and he went himself with his children to a place near Mansfield, called by the white men the Cathedral, where he put them in a safe place surrounded by stones. The country was burned up to the Murray River. Bunjil had said to Djurt Djurt and Thara 'When you have burned all the country you can stop there and be stone.' They are now turned to stone near Berwick, where you can see Djurt Djurt carrying Thara.<sup>3</sup> A few of Bunjil's children were burned, but the Bat and all his children were scorched. That is why he is so black and has such a grinning face."

It is evident that the institution of the "man's brother," and the "woman's sister" as totems is very widespread throughout Australia. I have traced it over an extent of about a thousand miles, and in tribes having marked differences in language and in social organization. It seems to be very persistent and enduring, for it remained among the Kurnai in full force after the ordinary social organization in class divisions and totems had become extinct. What may have been the origin of these abnormal totems I cannot tell. Possibly it may have been connected with the origin generally of all totems, and to explain the rise of totemism is as yet one of the unperformed tasks of anthropology.

*The Class Divisions have been subject to Development and Decay.*

In the preceding sections I have given my reasons for the belief that the primary class divisions were originally totems, and also that the class systems as a whole have been developed by subdivision of the earlier and simpler forms. There can, I think, be no doubt that the present totem groups are the youngest, and

<sup>1</sup> The Nankeen Kestrel, *Tinnunculus cenchroides*.

<sup>2</sup> The Brown Hawk, *Jericiden Berigora*!

<sup>3</sup> I am told that in old times before white men came, the blackfellows when they wanted to catch plenty of kangaroos, used to go to these two stones, and taking a bough, strip off the leaves and throw them down in front of "Djurt Djurt and Thara," then laying the twigs on the leaves. This is the only instance that I know of anything even approaching a votive offering.

in some cases of systems framed on the Barkinji type the primary divisions are totems as much as the totems themselves. The belief that the class systems have been produced by a division of the earlier groups has support given to it by traces of the process which can here and there be recognized. A good instance is given by the Wotjobaluk tribe. The two primary divisions of this tribe are found over a wide extent of country in slightly varied forms, probably dialectic variations; they have as sub-divisions not four sub-classes as in the Kamilaroi type, but six divided into two groups, and these sub-classes are, in fact, totems. These again have other groups of totems attached to them, for which in default of a better name I have used the term "pseudo totem." I subjoin the data in my possession, premising that there are details evidently still wanting. Enough is, however, recovered to enable me to deduce certain principles which, I believe, to underlie this system.

Primary Classes.	Totems.	Pseudo Totems.	Mortuary Totems.
Krokitch ...	Ngauī = the sun ...	Būnjil = a star, &c.	Wūtingani = a shadow thrown by the sun.
	Barewun = a cave ...	— ? , &c. ...	Beal Beal = red gum tree. <sup>2</sup>
	Batchangul = pelican, &c.	Berik = native cat, &c.	Mithagrarg = the bark of the smaller Eucalyptus. <sup>3</sup>
Gamutch ...	Jalan = death adder <sup>1</sup>	Gūnowara = swan, &c.	None.
	Ngūngūl = the sea ...	— ? , &c. ...	Jarnia = sea weed
	Wūrant = black cockatoo, &c.	Ngui = black duck, &c.	Darimūruk = a synonym of the black cockatoo <sup>4</sup>

This system seems to be a peculiar development of the Barkinji type. It has two primary classes which are recognized as being the equivalents of the Barkinji class names.<sup>5</sup> But in this case the totems have advanced to the grade of sub-classes. They have a markedly independent existence, subject to their primary. Yet there is not the restriction which is found in some of the systems of the type named wherein marriage of a totem is restricted to some other totem. In this case a Krokitch of whatever totem can marry a Gamutchgurk<sup>6</sup> of any of the totems of that class, always provided that there are not any disabilities

<sup>1</sup> *Acanthopsis antarctica*.

<sup>2</sup> *Eucalyptus rostrata*.

<sup>3</sup> *Eucalyptus dumosa*.

<sup>4</sup> Dari = white, muruk = temple, or side of the head.

<sup>5</sup> See p. 38.

<sup>6</sup> Gurk is the feminine affix.

arising out of nearness of kin. Another peculiarity is that several of the totems have a second name, which seems to have been on the high road to separate existence, or which may be the old name in process of extinction. Ngaui, for instance, has a second name, Garchuka,<sup>1</sup> which one informant, a Ngaui man, claimed as the synonym of his "mir," or totem. in fact, that both of these "mir" were his names. But Ngaui was especially his, and Garchuka came "a little behind it." On the other hand another informant, who also claimed both Ngaui and Garchuka, said that he was especially Garchuka, and that Ngaui came a little after his other name. Wherein the difference lay I was unable to learn more exactly, but it seems to me that Ngaui and Garchuka are, in fact, very slightly divergent branches of the same totem. This is, moreover, indicated by a remark made by each informant as to the pseudo totems to which I shall refer further on. Krokitch-Batchangal has also a second name which, however, appears to be more a name than a totem. Its members are called "Darauyauin-ngau-ung," or "we are warming ourselves," a name given to them because fire (wanyep) is one of their pseudo totems.

I have given three totems of each class as examples, but there are more; of Krokitch eight, and of Gamutch at least four.

The pseudo totems are very peculiar. In a former work by Mr. Fison and myself, these were referred to in speaking of the Mount Gambier tribe.<sup>2</sup>

The two primary classes appear in fact to divide all natural objects between them. As the aborigines say of those things, "they belong to them." This is not peculiar to these tribes but is found at far distant places in Australia, and may be much more general than has been suspected.<sup>3</sup>

As the primary class is divided into a number of totemic subdivisions, so all the objects claimed by the class are divided between these totems. Thus each totem claims a certain number of natural objects which are not all animal, for there are also a star, fire, wind, &c.

The distinction between the totemic names which are subdivisions, and those which are not lies in this. Both are called "mir" but while one of my informants, a Krokitch man, takes his name Ngaui from the sun, he *owns* Bunjil, one of the fixed

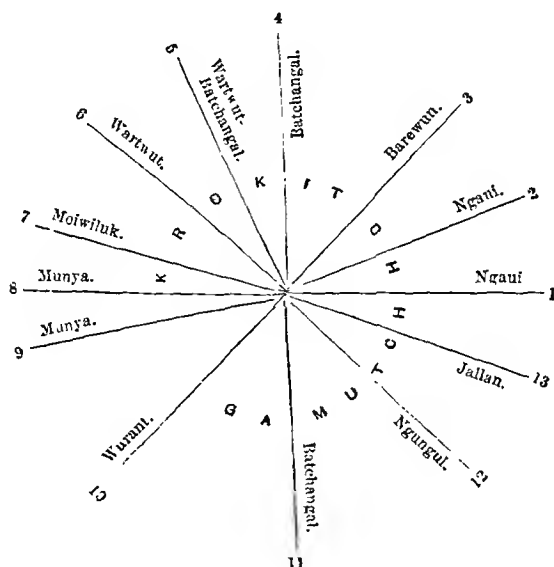
<sup>1</sup> White cockatoo.

<sup>2</sup> Kamilaroi and Kurnai, p. 168.

<sup>3</sup> Mr. J. C. Muirhead tells me that in the Wakelbara and other related tribes in Northern Queensland everything animate and inanimate belongs to one or other of the two class divisions. A wizard may only use in his incantations substances which belong to his class. The stage on which a dead body is placed must be made of the wood of a tree which is of the same class as the deceased, and so on with other matters.

stars,<sup>1</sup> and does not take it for a name at all—he is Ngaui, but not Bunjil. The true totem owns him, but he owns the pseudo totem. Light is thrown upon the structure and the development of the class divisions by considering the mechanical method used by the Wotjobaluk to preserve and explain a record of their classes and totems, and of their relation to those and to each other.

My informant worked this record out by laying down pieces of stick on the ground, determining their directions by the sun, and I took the directions of these sticks by the compass.



The stick No. 1 was first placed in a direction due east<sup>2</sup> then stick 2 was laid down pointing N. 70° E. They represented the two sub-divisions of the Ngaui division of Krokitch and the people belonging to them or forming them were called "Ngaui-nga-gūli," or "men of the sun."<sup>3</sup> The direction in which the sticks pointed indicated how the individual was to be laid in his grave. That is to say, his head was laid due east, or 20° north of east, as he respectively belonged to one or other of the

<sup>1</sup> Probably Fomalhaut.

<sup>2</sup> In the Wotjoballuk language North = Wartut, by which name the hot-wind is also known; East = Bopel Bopel; South = Wéjūr; and West = Winjūr.

<sup>3</sup> Ngaui = the sun, gūli or kūli = man.

sub-divisions of Ngaui. Ngani is the principal "Mir" or totem and from it all the others are counted.

My informant then placed stick 4 pointing north, indicating a very powerful Mir of Krokitch, namely, Batchangal. Stick 3 was then placed between 4 and 2, and indicated the Barewun people. The whole space between 1 and 2 is called "Kolkorn-Garchuka or "all" or "wholly" of the White Cockatoo. I have already said that this is a synonym of Ngaui, or nearly so. The space between 3 and 4 is called Krokitch-Batchangal, to distinguish it from another Batchangal of the Gamutch primary class which is represented by stick 11.

Stick 6 was now laid down, being Wartwut, the name of a powerful Mir, whose totem was the Hot-wind, which blows in that country from about north-west. Stick 5 placed between 4 and 6 pointing N. 20° W. indicated Wartwut-Batchangal, a totem having affinities to both 4 and 6. The space between 4 and 5 is called Kolkorn-Batchangal or "all," or "entirely Batchangal," and between 5 and 6 the space is Wartwut-Batchangal. My informant had now some difficulty in fixing the directions for the remaining totems of Krokitch, and he stated that to work it out satisfactorily he would require to get a number of men together so as to have members of the other totems to point out their own directions. However, after consideration he arranged as follows: He placed 8 as indicating Munya, and on either hand 7 and 9, indicating respectively Moiwiluk, and a second totem of 8. The space between 6 and 7 he called Wartwut-Moiwiluk, between 8 and 9 Kolkorn-Munya. The space between 7 and 8 he did not name, and I omitted to ask him. These nine sticks represent the principal totems of Krokitch. Perhaps there may be more, as there appears to be, for instance, a vacancy between 2 and 3 and between 3 and 4: on the other hand if the totems 5 and 7 are sub-divisions of 4 and 6 respectively, the vacancies referred to would be explained on the supposition that 2 and 3 had not sub-divided. That 7 is a sub-division of 6 is suggested by the statement of another informant that he was Wartwut but that Moiwiluk also "belonged to him," and by the statement of the informant who made the diagram of stick that the informant just named was "Wartwut but also partly Moiwiluk."

It seems, therefore, that the totems have been formed in this instance by a process of sub-division, by which for instance the group Ngaui has been separated into two nearly allied totems. Munya has also separated into two totems, which are distinguished, if not by separate pseudo totems, at any rate by different mortuary names.

Since the totems are counted from Ngaui, and since Krokitch-

Batchangal comes next in order of importance, it may be that Barewun has been a later development. As the space in the diagram between Ngaui and Barewun is called "wholly Garchuka" it seems possible that Barewun may have been a segmentation of Batchangal.

The synonym Garchuka for both of the Ngaui totems may also mean that that name is the oldest of all, and that out of it those two totems were formed.

Analogous suggestions arise from other particulars given in the diagram.

The mortuary totems are only applied to an individual after his death. Thus a Krokitch-Ngaui man dying would no longer be spoken of as Ngaui but would be "Wurti-Ngaui" or "a Shadow thrown by the sun;" a Krokitch-Batchangal would be Mitbagragr, or the "Bark of the Mallee," and so on. How this has arisen I know not, but it may, perhaps, have been connected with the extreme disinclination of these aborigines to mention the name of the dead.

The tabular form which I have given of the Wotjobaluk class system is imperfect, but the details suffice to show that it is a somewhat abnormal development of the Barkinji type in which the totems have obtained a marked prominence and have been in process of further segmentation partly in themselves and apparently also by the influence of the pseudo totems.

Cases such as that of the Wotjobaluk tribe show a process of development in the class systems, but there are other cases where there seems to have been a decay of the class system tending towards extinction, and of these the Woiworung tribe is a good example, because in it the process has been arrested by the annihilation of the tribe by reasons of the "blessings of civilisation" at a stage when one totem still remained extant. Other totems are recognisable in their apotheosis as stars, as recorded in the folklore of the tribe.

I have had occasion in other papers to deal with this tribe, to which I refer the reader for details.<sup>1</sup> The following are details relating to my above statement.

It was one of a number of kindred tribes all bound together by the same organisation. They occupied that part of Victoria which may be roughly defined by saying that in addition to the Western Port District it extended round the flanks of the Australian Alps to the Ovens River and northwards, westwards, and southwards as indicated by the points Seymour, Sandhurst, Bacchus Marsh, and Geelong. Beyond these boundaries were

<sup>1</sup> "The Jeraeil," "Journ. Anthropol. Inst.," May, 1885. "Migrations of the Kurnai Ancestors," "Journ. Anthropol. Inst.," May, 1886.

other communities distinguished by having on the north-east side the Kamilaroi organisation, on the north-west, west, and south the class organisation of the Wotjobaluk type, and to the south-east the Kurnai tribe without any class names whatever. Within the bounds named all the tribes had the two class names Bunjil and Waa, and they constituted what may be called the "Kulin nation," from a word found in some form in all their different dialects and meaning "man," *i.e.*, one of their own full grown males.

The social organisation of these tribes was based upon the above class names with descent in the male line, and the distribution of the members of the two classes in local totem clans, which I have before referred to. I cannot pretend to have obtained a complete list of all the clans of the different tribes of the Kulin nation, but the information which I have recorded gives certain trustworthy data. Out of fourteen clans I find six which were Waa and eight which were Bunjil. Marriage was of course between the two class names, and therefore since these names had received a peculiar local distribution, or perhaps had been locally aggregated, the marriages had become local as well as totemic. That is to say, a man being confined to one class name was also confined by customary law to the choice of a wife from some one or more localities.

The class name Waa = Crow had no totems, but Eaglehawk = Bunjil had one totem, Brownhawk = Thara. A native legend recounts how Bunjil left the earth with his sons and ascended to the sky in a whirlwind. Woiworung astronomy points out where they now are. Bunjil is Fomalhaut and as my informant said, "He is looking at what men are doing." The "sons"<sup>1</sup> of Bunjil are shown in the subjoined table.<sup>2</sup>

Tádjeri .. ..	Aebemar .. ..	<i>Phascogale pennicillata.</i>
Tárnäng .. ..	?	<i>Petaurus pygmaeus.</i>
Yukope .. ..	$\alpha$ crucis .. ..	?
Dántün .. ..	$\beta$ crucis .. ..	<i>Trychoglossus multicolor.</i>
Djört-djört <sup>3</sup> .. ..	$\beta$ centauri .. ..	<i>Tinnunculus cenchroides.</i>
Thára .. ..	$\alpha$ centauri .. ..	<i>Hiericidea Berigora?</i>

<sup>1</sup> Spoken of at p. 59 as Bunjil's "men."

<sup>2</sup> My Woiworung informant used a curious *aide memoire* for Bunjil and his sons, and he said it was used by his tribe for the purpose of record. The little finger of the left hand is used for Tádjeri, the ring finger for Tárnäng, the middle finger for Yukope, the fore finger for Dántün, the thumb for Thara, and the thumb of the right hand for Djört Djört. Here the record ends.

<sup>3</sup> The Wotjobaluk say that Djört is the brother of Bunjil, who was once a

The first column gives the native name of the totem animals, the second that of the star. The star which is "Turnung" was pointed out to me but I cannot now identify it.

The totems which Waa must have had seem to have become totally extinct without leaving a trace behind. My informant, who was Waa, and who was an extraordinary repository of information relating to his tribe, knew of none. I am convinced that had there been any legend about the "sons," that is to say, the totems of Waa, he would have known it.

The Woiworung class system when it existed in a complete form, must have been precisely that of the Barkinji type—that is, it had two primary intermarrying classes (Eaglehawk and Crow), each having a group of totems attached to it.

I submit that the instances which I have given shew that we may still find traces in the class systems both of development and of decay tending towards extinction.

### *Conclusion.*

In these notes I have placed on record additional facts as to the structure and geographical range of the class systems of tribes spread over almost the whole of the eastern half of the Australian Continent. I submit with some little confidence that the comparison of the different systems suggests a probable explanation of the development of the more complicated systems from the more simple ones. The structure of these systems suggests also that their arrangement with so remarkable a system of checks upon marriage has not been a matter of accidental occurrence, or, if I may use the expression, of the automatic development of their society, but of deliberate arrangement by a long succession of the aborigines in the past, who have thus endeavoured to bring their matrimonial arrangements into accord with that which they believed to be right and proper, and for the welfare of the community.

But while a comparative study of these systems reveals to us with some certainty their structure and the manner of their development, it leaves us in uncertainty as to the causes which led to their first inception, the manner in which the two primary divisions were formed, and the character of the more primitive society out of which the two intermarrying classes grew. It may be a matter of inference that the earlier group was what we have elsewhere spoken of as an "undivided commune," and

man on the earth and who is now a star. Bunjil's two wives were Gūnowara = Swan. With the Woiworung Bunjil is Fomalhaut and his two wives are  $\gamma$  and  $\epsilon$  Piscis.

that it would resemble one of the two exogamous groups of the Pirauru practice, in so far that each level generation had its marital rights in common, and as a whole was the parent of the next following generation.

It seems indeed that some such earlier community is implied by the establishment of the two primary class divisions. Yet their segmentation, if I may use that word, must have occurred at so early a period of man's history as to admit of the resulting social organisation of two exogamous classes being carried over the whole of the earth's surface wherever savage man has penetrated.

Such a conclusion seems to me to be forced upon one by the prevalence of this organisation over the whole world arranged into some form of intermarrying exogamous groups analogous to those of the Australians.

On this view it may be hopeless to expect to find any record of the causes which led to the origin of the two classes, or if we find any tradition which purports to give an explanation it is one which attributes it to a supernatural agency.

As to the origin of the totem names, I do not venture upon an explanation. I find no data at present upon which I feel it safe to generalise. All that I think I may venture upon is, that if the two first intermarrying groups had distinguishing names, they were probably those of animals and their totems, and, if so, the origin of totemism would be so far back in the mists of the ages as to be beyond my vision.

If others feel that they have a clearer vision, well and good, but it will be well to bear in mind that no explanation of the origin of totems and of totemism will suffice which ignores the Australian evidence as to the development of aboriginal society out of a status at least as primitive as that of the Pirauru group. Still less will it avail to deny the existence of the "intermarrying classes," or to assert that "they are a hypothesis only."<sup>1</sup> They are facts patent to all inquirers, and any one who chooses can examine them for himself.

Shortly stated, the conclusions to which the facts recorded in these notes have led me are as follow :—

(1.) The class systems of Australia have been developed from the original division of a community into two exogamous groups, each one being of the Pirauru character, and with descent counted through the mother only.

(2.) The gradual development of the various class systems has been accompanied by changes in the status of marriage and in the line of descent.

<sup>1</sup> J. F. McLennan's "*Studies in Ancient History*." New edition, edited by Dr. McLennan. Appendix, p. 315.

(3.) With the decay of the Pirauru practice, and the establishment of individual marriage, the line of descent has been changed from the mother to the father only.

(4.) With individual marriage and descent in the male line, the tendency has been for the class organisation to become extinct, and for the organisation in local groups to take its place.

(5.) Among the many causes producing social changes must be counted the influence of a more plentiful food supply in better watered districts.

## APPENDIX.

### *The New Norcia Marriage Laws.*

Bishop Salvado, of the Catholic Mission at New Norcia, Western Australia, shews the marriage regulations of the aborigines in that locality by means of an ingeniously arranged tree,<sup>1</sup> which is reproduced by Mr. G. W. Rusden in his "History of Australia," vol. i, p. 117. The reader is referred to Mr. Rusden's work as being more accessible than Salvado's.

The New Norcia tribe is divided in six classes, its system therein differing from that found among the West Australian natives in the neighbourhood of the N.W. Cape, which is of the four-class Kamilaroi type, with the usual arrangements as to marriage and descent.

The six classes are called, respectively, Palarop, Nakongok, Jirajiok, Mordorop, Tondorop, and Tirarop. Their marriage prohibitions are exhibited in the following table:—

Class	May not marry
Palarop .. .. .	Jirajiok, Palarop.
Nokongok .. .. .	Jirajiok, Nokongok.
Jirajiok .. .. .	Jirajiok, Palarop, Nokongok.
Mondorop .. .. .	Tirarop, Mondorop.
Tondorop .. .. .	Tirarop, Tondorop.
Tirarop .. .. .	Tirarop, Tondorop, Mondorop.

A glance at this table shows that the six classes range themselves into two sets of three each, and the prohibitions reveal

<sup>1</sup> "Information respecting the Habits and Customs of the Aboriginal Inhabitants of Western Australia." Presented to the Legislative Council by His Excellency's commands. Printed by the Government Printer, Perth, W.A., 1871.

an exogamous law, which is strictly binding upon every class, and partially binding upon each set. A clear distinction between the two sets is thus arrived at; in fact, each set represents a primary class, like Dilbi or Kupathin of the Kamilaroi, but with three sub-classes belonging to it, instead of two, as in the Kamilaroi system. Distinguishing these primary classes as A and B, we have :—

A = Palarop, Nokongok, Jirajiok.

B = Mondorop, Tondorop, Tirarop.

In the following table the marriages are shown, those which offend against the usual exogamous law of the primary classes being distinguished thus \*.

Primary Class A.	Marries	Primary Class B.	Marries
Palarop ... ..	<div> <div>Mondorop B.</div> <div>Tondorop B.</div> <div>Tirarop B.</div> <div>Nokongok A.*</div> </div>	Mindorop ... ..	<div> <div>Palarop A.</div> <div>Nokongok A.</div> <div>Jirajiok A.</div> <div>Tondorop B.*</div> </div>
Nokongok ... ..	<div> <div>Mondorop B.</div> <div>Tondorop B.</div> <div>Tirarop B.</div> <div>Palarop A.*</div> </div>	Tondorop ... ..	<div> <div>Palarop A.</div> <div>Nokongok A.</div> <div>Jirajiok A.</div> <div>Mondorop B.*</div> </div>
Jirajiok ... ..	<div> <div>Mondorop B.</div> <div>Tondorop B.</div> <div>Tirarop B.</div> </div>	Tirarop... ..	<div> <div>Palarop A.</div> <div>Nokongok A.</div> <div>Jirajiok A.</div> </div>

From the foregoing we get the social organisation of the tribe which is as follows :—

(1.) Two primary classes.

(2.) Each primary class has three exogamous sub-classes, any one of which may marry into any sub-class of the other primary division.

(3.) In each primary class two of the sub-classes intermarry with one another as well as with all those of the other primary division.

It will be observed that one sub-class in each primary division (Jirajiok A, Tirarop B) marries only into the other division. That is to say, these two sub-classes observe the usual exogamous rule of the primary classes, and the question is, why the other sub-classes do not observe it? One or two

conjectural solutions of this problem might be offered ; but our experience in these researches has made us shy of such solutions how plausible soever they may appear. If we knew the regulations as to descent and the totemic divisions of the sub-classes (supposing them to exist here as elsewhere) we should probably find in them much to help us. Unfortunately Dr. Salvado not only does not give these particulars, but he turns a deaf ear to our appeals for information concerning them, and all our efforts to obtain the information from other sources have been equally unsuccessful.

LORIMER FISON.

*Description of Plate V.*

Sketch map of Australia, showing the geographical distribution of the various class-systems.

The PRESIDENT read the following note :—

NOTE *on* AUSTRALIAN MARRIAGE SYSTEMS

By FRANCIS GALTON, M.A., F.R.S.

A very simple way of understanding the peculiarly complicated system of Australian marriages has lately occurred to me, and I should be glad to bring it before the notice of the meeting. The well-known Kamilaroi system is as follows: I add the letters A., B., C., D., to the names of the sub-phratries for the purposes of the explanation to be offered:—

TABLE I.

A Male			marries a			and the children are		
A. Muri	..	..	D. Kumbo	..	..	C. Ipai.		
B. Kubi	..	..	C. Ipai	..	..	D. Kumbo.		
C. Ipai	..	..	B. Kubi	..	..	A. Muri.		
D. Kumbo	..	..	A. Muri	..	..	B. Kubi		

I had often tried, in vain, to find an easy clue to this strange custom, feeling assured that no aboriginal Australian brain could acquire the accurate and almost instinctive knowledge they all have of it without one. At last, I think, or rather hope, that I have succeeded. We now know that the Muri and the Kubi are sub-phratries of the phratrie called Dilbi, let us designate this phratrie by the letter P.; also that the Ipai and the Kumbo are sub-phratries of the phratrie called Kupathin, and this phratrie we will designate by Q. More briefly, A. and B. are sub-phratries of P.; C. and D. are sub-phratries of Q.

Now if we suppose a cross division, such that A. and C. are both alike in some respect, which we will indicate by appending to them the numeral 1, and that B. and D. are also alike in some contrasted respect, which we will designate by appending to them the numeral 2, we shall convert Table I into Table II.

TABLE II.

Phratries.	A male	marries a female	their children are
P. .. .. {	A. = P. 1	Q. 2	Q. 1
	B. = P. 2	Q. 1	Q. 2
Q. .. .. {	C. = Q. 1	P. 2	P. 1
	D. = Q. 2	P. 1	P. 2

The last three columns are to read thus :—A male P. 1 marries a female Q. 2; their children are Q. 1. A male P. 2 marries a female Q. 1; their children are Q. 2; and so on. We see at once from this that a man may not marry a woman who has the same letter or the same numeral as himself, and that the children take after the letter of their mother and after the numeral of their father. Amongst the Kiabara the marriage rule is exactly the same, except that the children take after the numeral of their mother and after the letter of their father.

It is extremely difficult, if not impossible, to find good analogies in civilised life to these phratries and sub-phratries. I will, therefore, take an illustration that does not profess to be applicable, otherwise than by giving an adequate idea of the sort of function that is intended to be described by these numerals and letters. Suppose persons of both sexes to be educated, some at Oxford, and some at Cambridge. Again, suppose persons of both sexes to be members of one or other of two clubs

to which members of either university are equally admissible, such as are the Oxford and Cambridge Club and the University Club. Then the Australian marriage rule is analogous to saying that a man may not marry a woman who is a member either of the same university or of the same club as himself. Also, that, if he be one of the Kamilaroi, the children will be entered at their mother's university and at his club; but if he be one of the Kiabara, the children will be entered at his university, and at their mother's club. A rule so simple as this could be understood by any savage, whose totem and other customs are quite as distinct, and affect a far larger part of their lives than the consequences of being an Oxford or a Cambridge man, and of belonging to this club or that, affect ours. Now comes the testing question, does such a cross division as that which I have supposed, really exist? I communicated with Mr. Frazer on this subject, whose recent volume on Totemism is very favourably known. He pointed out to me that Mr. Ridley called the Muri the highest grade and the Kubi the lowest, and that, he adds, "so every family passes in two or three or four generations, through the highest and lowest grades—a curious combination of the ideas of aristocracy and levelling—but the difference in rank is slight." Mr. Frazer also informs me that Prof. Müller, of Vienna, has quoted apparently from an early work of Mr. Ridley, whether by mistake or not, I do not know, in a different sense, making the Ipai and Kumbo patricians, and the Muri and Kubi plebians. It is reasonable to believe that the zealous inquirers into Australian totems and other distinctions have not yet got wholly to the bottom of them, and that an as-yet-undiscovered cross division, such as I have supposed, may be found on further inquiry to exist. Mr. Frazer has written on this subject to his Australian correspondents, and I await the result with much curiosity. If my expectations are falsified, I can at all events recommend my theory as a *memoria technica*, by which the complexities of the Australian marriage customs may easily be kept in mind.

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## ANTHROPOLOGICAL MISCELLANEA.

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### *The PYGMY RACES of MEN.*

By Prof. WILLIAM HENRY FLOWER, C.B., LL.D., F.R.S.

(A Lecture delivered at the Royal Institution of Great Britain<sup>1</sup>  
on April 13th, 1888.)

It is well known that the nations of antiquity entertained a widespread belief in the existence of a race or races of human beings of exceedingly diminutive stature, who dwelt in some of the remote and unexplored regions of the earth. These were called *Pygmies*, a word said to be derived from *πυγμή*, which means a fist, and also a measure of length, the distance from the elbow to the knuckles of an ordinary-sized man, or rather more than 13 inches.

In the opening of the third book of the "Iliad," the Trojan hosts are described as coming on with noise and shouting, "like the cranes which flee from the coming of winter and sudden rain, and fly with clamour towards the streams of ocean, bearing slaughter and fate to the pygmy men, and in early morn offer cruel battle," or, as Pope has it—

"So when inclement winters vex the plain,  
With piercing frosts, or thick descending rain,  
To warmer seas the cranes embodied fly,  
With noise and order through the midway sky,  
To Pygmy nations wounds and death they bring,  
And all the war descends upon the wing."

The combats between the pygmies and the cranes are often alluded to by later classical writers, and are not unfrequently depicted upon Greek vases. In one of these in the Hope collection at Deepdene, in which the figures are represented with great spirit, the pygmies are dwarfish-looking men with large heads, Negro features, and close woolly or frizzly hair. They are armed with lances. Notices of a less poetical and apparently more scientific character of the occurrence of races of very small human beings are met with in Aristotle, Herodotus, Ctesias, Pliny, Pomponius Melo, and others. Aristotle places his pygmies in Africa, near the sources of the Nile, while Ctesias describes a race

<sup>1</sup> Reprinted by permission of the Managers of the Royal Institution, and revised by the author.

of dwarfs in the interior of India. The account in Herodotus is so circumstantial, and has such an air of truthfulness about it especially in connection with recent discoveries, that it is worth quoting in full.<sup>1</sup>

"I did hear, indeed, what I will now relate, from certain natives of Cyr  n  . Once upon a time, they said, they were on a visit to the oracular shrine of Ammon, when it chanced that, in the course of conversation with Etearchus, the Ammonian king, the talk fell upon the Nile, how that its sources were unknown to all men. Etearchus upon this mentioned that some Nasamonians had once come to his court, and when asked if they could give any information concerning the uninhabited parts of Libya, had told the following tale. (The Nasamonians are a Libyan race who occupy the Syrtes, and a tract of no great size towards the east.) They said there had grown up among them some wild young men, the sons of certain chiefs, who, when they came to man's estate, indulged in all manner of extravagancies, and among other things drew lots for five of their number to go and explore the desert parts of Libya, and try if they could not penetrate further than any had done previously. The young men therefore dispatched on this errand by their comrades with a plentiful supply of water and provisions, travelled at first through the inhabited region, passing which they came to the wild beast tract, whence they finally entered upon the desert, which they proceeded to cross in a direction from east to west. After journeying for many days over a wide extent of sand, they came at last to a plain where they observed trees growing; approaching them, and seeing fruit on them, they proceeded to gather it. While they were thus engaged, there came upon them some dwarfish men, under the middle height, who seized them and carried them off. The Nasamonians could not understand a word of their language, nor had they any acquaintance with the language of the Nasamonians. They were led across extensive marshes, and finally came to a town, where all the men were of the height of their conductors, and black-complexioned. A great river flowed by the town, running from west to east, and containing crocodiles."

It is satisfactory to know that the narrative concludes by saying that these pioneers of African exploration, forerunners of Bruce and Park, of Barth, Livingstone, Speke, Grant, Schweinfurth, Stanley, and the rest, "got safe back to their country."

Extension of knowledge of the natural products of the earth, and a more critical spirit on the part of authors, led to attempts to account for this belief, and the discovery of races of monkeys—of the doings of which, it must be said, more or less fabulous stories were often reported by travellers—generally sufficed the commentators and naturalists of the last century to explain the origin of the stories of the pygmies. To this view the great authority of Buffon was extended.

<sup>1</sup> "Herodotus," Book II, 32, Rawlinson's translation, p. 47.

Still more recently-acquired information as to the actual condition of the human population of the globe has, however, led to a revision of the ideas upon the subject, and to more careful and critical researches into the ancient documents. M. de Quatrefages, the eminent and veteran Professor of Anthropology at the Muséum d'Histoire Naturelle of Paris, especially, has carefully examined and collated all the evidence bearing upon the question, and devoted much ingenuity of argument to prove that the two localities in which the ancient authors appear to place their pygmies, the interior of Africa near the sources of the Nile, and the southernmost parts of Asia, and the characters they assign to them, indicate an actual knowledge of the existence of the two groups of small people which still inhabit these regions, the history of which will form the subject of this lecture. The evidence which has convinced M. de Quatrefages, and which, I have no doubt, will suffice for those who take pleasure in discovering an underlying truth in all such legends and myths, or in the more grateful task of rehabilitating the veracity of the fathers of literature and history, will be found collected in a very readable form in a little book published last year in the "*Bibliothèque scientifique contemporaine*," called "*Les Pygmées*," to which I refer my hearers for fuller information upon the subject of this discourse, and especially for numerous references to the literature, which, as the book is accessible to all who wish to pursue it further, I need not give here.

It is still, however, to my mind, an open question whether these old stories may not be classed with innumerable others, the offspring of the fertile invention of the human brain, the potency of which as an origin of myths has, I think, sometimes been too much underrated. I shall, therefore, now take leave of them, and confine myself to giving, as far as the brief space of time at my disposal admits, an account of our actual knowledge of the smallest races of men either existing, or, as far as we know, ever having existed on earth, and which may, therefore, taking the word in its current though not literal sense, be called the "pygmies" of the species.

Among the various characters by which the different races of men are distinguished from one another, *size* is undoubtedly one of considerable importance. Not but what in each race there is much individual variation, some persons being taller and some shorter; yet these variations are, especially in the purer or less mixed races, restricted within certain limits, and there is a general average, both for men and women, which can be ascertained when a sufficient number of accurate measurements have been recorded. That the prevailing size of a race is a really deeply-seated, inherited characteristic, and depends but little on outward conditions, as abundance of food, climate, &c., is proved by well-known facts. The tallest and the shortest races in Europe are respectively the Norwegians and the Lapps, living in almost the same region. In Africa, also, the diminutive Bushmen and the tallest race of the country, the Kaffirs, are close neighbours. The natives of the

Andaman Islands and those of many islands of the equatorial region of the Pacific, in which the conditions are similar, or if anything more favourable to the former, are at opposite ends of the scale of height. Those not accustomed to the difficulties both of making and recording such measurements will scarcely be prepared, however, to learn how meagre, unsatisfactory, and unreliable our knowledge of the stature of most of the races of mankind is at present, although unquestionably it has been considerably increased within recent years. We must, however, make use of such material as we possess, and trust to the future correction of errors when better opportunities occur.

It is convenient to divide men, according to their height, into three groups—tall, medium, and short; in Topinard's system,<sup>1</sup> the first being those the average height (of the men) of which is above 1·700 metres (5 feet 7 inches), the last those below 1·600 metres (5 feet 3 inches), and the middle division those between the two. In the short division are included certain of the Mongolian or yellow races of Asia, as the Samoyedes, the Ostiaks, the Japanese, the Siamese, and the Annamites; also the Veddahs of Ceylon and certain of the wild hill-tribes of Southern India. These all range between 1·525 and 1·600 metres—say between 5 feet and 5 feet 3 inches.

It is of none of these people that I am going to speak to-day. My pygmies are all on a still smaller scale, the average height of the men being in all cases below 5 feet, in some cases, as we shall see, considerably below.

Besides their diminutive size, I may note at the outset that they all have in a strongly-marked degree the character of the hair distinguished as frizzly—*i.e.*, growing in very fine, close curls, and flattened or elliptical in section, and therefore, whatever other structural differences they present, they all belong to the same primary branch of the human species as the African Negro and the Melanesian of the West Pacific.

I will first direct your attention to a group of islands in the Indian Ocean—the Andamans—where we shall find a race in many respects of the greatest possible interest to the anthropologist.

These islands are situated in the Bay of Bengal between the 10th and 14th parallels of north latitude, and near the meridian 93° east of Greenwich, and consist of the Great and Little Andamans. The former is about 140 miles long, and has a breadth nowhere exceeding 20 miles. It is divided by narrow channels into three, called respectively North, Middle, and South Andaman, and there are also various smaller islands belonging to the group. Little Andaman is a detached island lying about 28 miles to the south of the main group, about 27 miles in length and 10 to 18 in breadth.

Although these islands have been inhabited for a very great length of time by people whose state of culture and customs have

<sup>1</sup> "Elements d'Anthropologie Générale." Paris, 1885, p. 463.

undergone little or no change, as proved by the examination of the contents of the old kitchen-middens, or refuse heaps, found in many places in them, and although they lie so near the track of civilisation and commerce, the islands and their inhabitants were practically unknown to the world until so recently as the year 1858. It is true that their existence is mentioned by Arabic writers of the ninth century, and again by Marco Polo, and that in 1788 an attempt was made to establish a penal colony upon them by the East India Company, which was abandoned a few years after; but the bad reputation the inhabitants had acquired for ferocious and inhospitable treatment of strangers brought by accident to their shores, caused them to be carefully avoided, and no permanent settlement or relations of anything like a friendly character, or likely to afford any useful information as to the character of the islands or the inhabitants, were established. It is fair to mention that this hostility to foreigners, which for long was one of the chief characteristics by which the Andamanese were known to the outer world, found much justification in the cruel experiences they suffered from the malpractices, especially kidnapping for slavery, of the Chinese and Malay traders who visited the islands in search of *bêche de mer* and edible birds'-nest. It is also to this characteristic that the inhabitants owe so much of their interest to us from a scientific point of view, for we have here the rare case of a population, confined to a very limited space, and isolated for hundreds, perhaps thousands, of years from all contact with external influence, their physical characters unmixed by crossing, and their culture, their beliefs, their language entirely their own.

In 1857, when the Sepoy mutiny called the attention of the Indian Government to the necessity of a habitation for their numerous convict prisoners, the Andaman Islands were again thought of for the purpose. A Commission, consisting of Dr. F. J. Mouat, Dr. G. Playfair, and Lieut. J. A. Heathcote, was sent to the islands to report upon their capabilities for such a purpose; and, acting upon its recommendations, early in the following year the islands were taken possession of in the name of the East India Company by Captain (now General) H. Munro, and the British flag hoisted at Port Blair, near the southern end of Great Andaman, which thenceforth became the nucleus of the settlement of invaders, now numbering about 15,000 persons, of whom more than three-fourths are convict prisoners, the rest soldiers, police, and the usual accompaniments of a military station.

The effect of this inroad upon the unsophisticated native population, who, though spread over the whole area of the islands, were far less numerous, may easily be imagined. It is simply deterioration of character, moral and physical decay, and finally extinction. The newly-introduced habits of life, vices, and diseases, are spreading at a fearful rate, and with deadly effect. In this sad history there are, however, two redeeming features which distinguish our occupation of the Andamans from that of Tasmania, where a similar tragedy was played out during the present century. In the

first place, the British Governors and residents appear from the first to have used every effort to obtain for the natives the most careful and considerate treatment, and to alleviate as much as possible the evils which they have unintentionally been the means of inflicting on them. Secondly, most careful records have been preserved of the physical characters, the social customs, the arts, manufactures, traditions, and language of the people while still in their primitive condition. For this most important work, a work which, if not done, would have left a blank in the history of the world which could never have been replaced, we are indebted almost entirely to the scientific enthusiasm of one individual, Mr. Edward Horace Man, who most fortunately happened to be in a position (as Assistant Superintendent of the Islands, and specially in charge of the natives) which enabled him to obtain the required information with facilities which probably no one else could have had, and whose observations "On the Aboriginal Inhabitants of the Andaman Islands," published by the Anthropological Institute of Great Britain and Ireland, are most valuable, not only for the information they contain, but as correcting the numerous erroneous and misleading statements circulated regarding these people by previous and less well-informed or less critical authors.

The Arab writer of the ninth century previously alluded to, states that "their complexion is frightful, their hair frizzled, their countenance and eyes frightful, their feet very large, and almost a cubit in length, and they go quite naked," while Marco Polo (about 1285) says that "the people are no better than wild beasts, and I assure you all the men of this island of Angamanain have heads like dogs, and teeth and eyes likewise; in fact, in the face they are just like big mastiff dogs." These specimens of mediæval anthropology are almost rivalled by the descriptions of the customs and moral character of the same people published as recently as 1862, based chiefly on information obtained from one of the runaway sepoy convicts, and which represent them as among the lowest and most degraded of human beings.

The natives of the Andamans are divided into nine distinct tribes, each inhabiting its own district. Eight of these live upon the Great Andaman Islands, and one upon the hitherto almost unexplored Little Andaman. Although each of these tribes possesses a distinct dialect, these are all traceable to the same source, and are all in the same stage of development. The observations that have been made hitherto relate mostly to the tribe inhabiting the south island, but it does not appear that there is any great variation either in physical characters or manners, customs, and culture among them.

With regard to the important character of size, we have more abundant and more accurate information than of most other races. Mr. Man gives the measurements of forty-eight men and forty-one women, making the average of the former 4 feet  $10\frac{3}{4}$  inches, that of the latter 4 feet  $7\frac{1}{4}$  inches, a difference therefore of  $3\frac{1}{2}$  inches between the sexes. The tallest man was 5 feet  $4\frac{1}{4}$  inches; the shortest 4 feet 6 inches. The tallest woman 4 feet  $11\frac{1}{2}$  inches; the shortest

4 feet 4 inches. Measurements made upon the living subject are always liable to error, but it is possible that in so large a series these will compensate each other, and that therefore the averages may be relied upon. My own observations, based upon the measurements of the bones alone of as many as twenty-nine skeletons, give smaller averages, viz., 4 feet  $8\frac{1}{2}$  inches for the men, and 4 feet  $6\frac{1}{2}$  inches for the women; but these, it must be recollected, are calculated from the length of the femur, upon a ratio which, though usually correct for Europeans, may not hold good in the case of other races.<sup>1</sup> The hair is fine, and very closely curled; woolly, as it is generally called, or, rather, frizzly, and elliptical in section, as in the Negroes. The colour of the skin is very dark, although not absolutely black. The head is of roundish (brachycephalic) form, the cephalic index of the skull being about 82. The other cranial characters are fully described in the papers just referred to. The teeth are large, but the jaws are only slightly prognathous. The features possess little of the Negro type; at all events, little of the most marked and coarser peculiarities of that type. The projecting jaws, the prominent thick lips, the broad and flattened nose of the genuine Negro are so softened down in the Andamanese as scarcely to be recognised, and yet in the relative proportions of the limb-bones, especially in the shortness of the humerus compared with the forearm, and in the form of the pelvis, Negro affinities are most strongly indicated.

In speaking of the culture of the Adamanese, of course I only refer to their condition before the introduction of European civilisation into the islands. They live in small villages or encampments, in dwellings of simple and rude construction, built only of branches and leaves of trees. They are entirely ignorant of agriculture, and keep no poultry or domestic animals. They make rude pots of clay, sun-dried, or partially baked in the fire, but these are hand-made, as they are ignorant of the use of the potter's wheel. Their clothing is of the scantiest description, and what little they have serves chiefly for decorative or ornamental purposes, and not for keeping the body warm. They make no use of the skins of animals. They have fairly well-made dug-out canoes and outriggers, but fit only for navigating the numerous creeks and straits between the islands, and not for voyages in the open sea. They are expert swimmers and divers. Though constantly using fire, they are quite ignorant of the art of producing it, and have to expend much care and labour in keeping up a constant supply of burning or smouldering wood. They are ignorant of all metals; but for domestic purposes make great use of shells, especially a species of *Cyrena* found abundantly on the shores of the islands, also quartz chips and flakes, and bamboo knives. They have stone

<sup>1</sup> See "On the Osteology and Affinities of the Natives of the Andaman Islands" ("Journal Anthropological Institute," vol. ix, p. 108, 1879); and "Additional Observations on the Osteology of the Natives of the Andaman Islands" (*ibid.*, vol. xiv, p. 115, 1884).

anvils and hammers, and they make good string from vegetable fibres, as well as baskets, fishing nets, sleeping mats, &c. Their principal weapons are the bow and arrow, in the use of which they are very skilful. They have harpoons for killing turtle and fish, but no kind of shield or breastplate for defence when fighting. The natural fertility of the island supplies them with abundance and variety of food all the year round, the purveying of which affords occupation and amusement for the greater part of the male population. This food consists of pigs (*Sus andamanensis*), which are numerous on the islands, paradoxures, dugong, and occasionally porpoise, iguanas, turtles, turtles' eggs, many kinds of fish, prawns, mollusks, larvæ of large wood-boring and burrowing beetles, honey, and numerous roots (as yams), fruits, and seeds. The food is invariably cooked before eating, and generally taken when extremely hot. They were ignorant of all stimulants or intoxicating drinks—in fact, water was their only beverage; and tobacco, or any substitute for it, was quite unknown till introduced by Europeans.

As with all other human beings existing at present in the world, however low in the scale of civilisation, the social life of the Andamanese is enveloped in a complex maze of unwritten law or custom, the intricacies of which are most difficult for any stranger to unravel. The relations they may or may not marry, the food they are obliged or forbidden to partake of at particular epochs of life or seasons of the year, the words and names they may or may not pronounce; all these, as well as their traditions, superstitions, and beliefs, their occupations, games, and amusements, of which they seem to have had no lack, would take far too long to describe here; but before leaving these interesting people, I may quote an observation of Mr. Man's, which, unless he has seen them with too *couleur-de-rose* eyesight, throws a very favourable light upon the primitive unsophisticated life of these poor little savages, now so ruthlessly broken into and destroyed by the exigencies of our ever-extending empire.

"It has been asserted," Mr. Man says, "that the 'communal marriage' system prevails among them, and that 'marriage is nothing more than taking a female slave'; but, so far from the contract being regarded as a merely temporary arrangement, to be set aside at the will of either party, no incompatibility of temper or other cause is allowed to dissolve the union; and while bigamy, polygamy, polyandry, and divorce are unknown, conjugal fidelity till death is not the exception but the rule, and matrimonial differences, which, however, occur but rarely, are easily settled with or without the intervention of friends." In fact, Mr. Man goes on to say, "One of the most striking features of their social relations is the marked equality and affection which subsists between husband and wife," and the consideration and respect with which women are treated might with advantage be emulated by certain classes in our own land.

It should also be mentioned that cannibalism and infanticide,

two such common incidents of savage life, were never practised by them.

We must now pass to the important scientific question. Who are the natives of the Andaman Islands, and where, among the other races of the human species, shall we look for their nearest relations?

It is due mainly to the assiduous researches into all the documentary evidence relating to the inhabitants of Southern Asia and the Indian Archipelago, conducted through many years by M. de Quatrefages, in some cases with the assistance of his colleague M. Hamy, that the facts I am about to put before you have been prominently brought to light and their significance demonstrated.

It is well known that the greater part of the large island of New Guinea, and of the chain of islands extending eastwards and southwards from it, including the Solomon Islands, the New Hebrides, and New Caledonia, and also the Fijis, are still inhabited mainly by people of dark colour, frizzly hair, and many characteristics allying them to the Negroes of Africa. These constitute the race to which the term *Melanesian* is commonly applied in this country, or *Oceanic Negroes*, the "*Papouas*" of Quatrefages. Their area at one time was more extensive than it is now, and has been greatly encroached upon by the brown, straight-haired *Polynesian* race with Malay affinities, now inhabiting many of the more important islands of the Pacific, and the mingling of which with the more aboriginal *Melanesians* in various proportions has been a cause, among others, of the diverse aspect of the population on many of the islands in this extensive region. These *Papouas*, or *Melanesians*, however, differ greatly from the *Andamanese* in many easily defined characters, which are especially, their larger stature, their long, narrow, and high skulls, and their coarser and more *Negro-like* features. Although undoubtedly allied, we cannot look to them as the nearest relations of our little *Andamanese*.

When the Spaniards commenced the colonisation of the Philippines, they met with, in the mountainous region in the interior of the Island of Luzon, besides the prevailing native population, consisting of *Tagals* of Malay origin, very small people, of black complexion, with the frizzly hair of the African Negroes. So struck were they with the resemblance, that they called them "*Negritos del Monte*" (little Negroes of the mountain). Their local name was *Aigtas*, or *Inagtas*, said to signify "*black*," and from which the word *Aëta*, generally now applied to them, is derived. These people have lately been studied by two French travellers, M. Marche and Dr. Montano; the result of their measurements gives 4 feet 8 $\frac{1}{4}$  inches as the average height of the men, and 4 feet 6 $\frac{1}{2}$  inches the average for the women. In many of their moral characteristics they resemble the *Andamanese*. The *Aëtas* are faithful to their marriage vows, and have but one wife. The affection of parents for children is very strong, and the latter have for their father and mother much love and respect. The marriage ceremony, according to M. Montano, is very remarkable. The

affianced pair climb two flexible trees placed near to each other. One of the elders of the tribe bends them towards each other. When their heads touch, the marriage is legally accomplished. A grand *fête*, with much dancing, concludes the ceremony.

It was afterwards found that the same race existed in other parts of the archipelago, Panay, Mindanao, &c., and that they entirely peopled some little islands—among others, Bougas Island, or “*Isla de los Negros*.”

As the islands of these eastern seas have become better known, further discoveries of the existence of a small Negroid population have been made in Formosa, in the interior of Borneo, Sandalwood Island (Sumba), Xulla, Bourou, Ceram, Flores, Solor, Lomblem, Pantar, Ombay, the eastern peninsula of Celebes, &c. In fact, Sumatra and Java are the only large islands of this great area which contain no traces of them except some doubtful cross-breeds, and some remains of an industry which appears not to have passed beyond the Age of Stone.

The Sunda Islands form the southern limit of the Negrito area; Formosa, the last to the north, where the race has preserved all its characters. But beyond this, as in Loo Choo, and even in the south-east portion of Japan, it reveals its former existence by the traces it has left in the present population. That it has contributed considerably to form the population of New Guinea is unquestionable. In many parts of that great island, small round-headed tribes live more or less distinct from the larger and longer-headed people who make up the bulk of the population.

But it is not only in the islands that the Negrito race dwell. Traces of them are found also on the mainland of Asia, but everywhere under the same conditions; in scattered tribes, occupying the more inaccessible mountainous regions of countries otherwise mainly inhabited by other races, and generally in a condition more or less of degradation and barbarism, resulting from the oppression with which they have been treated by their invading conquerors; often, moreover, so much mixed that their original characters are scarcely recognisable. The Semangs of the interior of Malacca in the Malay peninsula, the Sakays of Perak, the Moys of Annam, all show traces of Negrito blood. In India proper, especially among the lowest and least civilised tribes, not only of the central and southern districts, but almost to the foot of the Himalayas, in the Punjab, and even to the west side of the Indus, according to Quatrefages, frizzly hair, Negro features, and small stature, are so common that a strong argument can be based on them for the belief in a Negrito race forming the basis the whole pre-Aryan, or Dravidian as it is generally called, population of the peninsula. The crossing that has taken place with other races has doubtless greatly altered the physical characters of this people, and the evidences of this alteration manifest themselves in many ways; sometimes the curliness of the hair is lost by the admixture with straight-haired races, while the black complexion and small stature remain; sometimes the stature is increased, but the colour,

which seems to be one of the most persistent of characteristics, remains.

The localities in which the Negrito people are found in their greatest purity, either in almost inaccessible islands, as on the Andamans, or elsewhere in the mountainous ranges of the interior only; and their social condition and traditions, wherever they exist—all point to the fact that they were the earliest inhabitants; and that the Mongolian and Malay races on the east, and the Aryans on the west, which are now so rapidly exterminating and replacing them, are later comers into the land, exactly as, in the greater part of the Pacific Ocean, territory formerly occupied by the aboriginal dark, frizzly-haired Negroid Melaneans has been gradually and slowly invaded by the brown Polynesians, who in their turn, but by a much more rapid process, are being replaced by Europeans.

We now see what constitutes the great interest of the Andamanese natives to the student of the ethnological history of the Eastern world. Their long isolation has made them a remarkably homogeneous race, stamping them all with a common resemblance not seen in the mixed races generally met with in continental areas. For although, as with most savages, marriages within the family (using the term in a very wide sense) are most strictly forbidden, all such alliances have necessarily been confined to natives of the islands. They are the least modified representatives of the people who were, so far as we know, the primitive inhabitants of a large portion of the earth's surface, but who are now verging on extinction. It is, however, not necessary to suppose that the Andaman Islanders give us the exact characters and features of all the other branches of the race. Differences in detail doubtless existed—differences which are almost always sure to arise whenever races become isolated from each other for long periods of time.

In many cases the characters of the ancient inhabitants of a land have been revealed to us by the preservation of their actual remains. Unfortunately we have as yet no such evidence to tell us of the former condition of man in Southern Asia. We may, however, look upon the Andamanese, the Aëtas, and the Semangs, as living fossils; and by their aid conjecture the condition of the whole population of the land in ancient times. It is possible, also, to follow Quatrefages, and to see in them the origin of the stories of the Oriental pygmies related by Ctesias and by Pliny.

We now pass to the continent of Africa, in the interior of which the pygmies of Homer, Herodotus, and Aristotle have generally been placed. Africa, as is well known, is the home of another great branch of the black, frizzly-haired, or Ethiopian division of the human species, which does, or did till lately, occupy the southern two-thirds of this great continent, the northern third being inhabited by Hamite and Semite branches of the great white or Caucasian primary division of the human species, or by races resulting from the mixture of these with the Negroes. But besides the true Negro, there has long been known to exist in the southern part of the continent a curiously modified type, consisting of the

Hottentots, and the Bushmen—Bosjesmen (men of the woods) of the Dutch colonists—the latter of whom, on account of their small size, come within the scope of the present subject. They lead the lives of the most degraded of savages, dwelling among the rocky and more inaccessible mountains of the interior, making habitations of the natural caves, subsisting entirely by the chase, being most expert in the use of the bow and arrow, and treated as enemies and outcasts by the surrounding and more civilised tribes, whose flocks and herds they show little respect for when other game is not within reach. The physical characters of these people are well known, as many specimens have been brought to Europe alive for the purpose of exhibition. The hair shows the extreme of the frizzly type; being shorter and less abundant than that of the ordinary Negro, it has the appearance of growing in separate tufts, which coil together into round balls compared to “peppercorns.” The yellow complexion differs from that of the Negro, and, combined with the wide cheek-bones and form of the eyes, so much recalls that of certain of the pure yellow races that some anthropologists are inclined to trace true Mongolian affinities or admixture, although the extreme crispness of the hair makes such a supposition almost impossible. The width of the cheek-bones and the narrowness of the forehead and the chin give a lozenge-shape to the front view of the face. The forehead is prominent and straight; the nose extremely flat and broad, more so than in any other race, and the lips prominent and thick, although the jaws are less prognathous than in the true Negro races. The cranium has many special characters by which it can be easily distinguished from that of any other. It has generally a very feminine, almost infantile, appearance, though the capacity of the cranial cavity is not the smallest, exceeding that of the Andamanese. In general form the cranium is rather oblong than oval, having straight sides, a flat top, and especially a vertical forehead, which rises straight from the root of the nose. It is moderately dolichocephalic or rather mesocephalic, the average index of ten specimens being 75·4. The height is in all considerably less than the breadth, the average index being 71·1. The glabella and infra-orbital ridges are little developed, except in the oldest males. The malar bones project much forwards, and the space between the orbits is very wide and flat. The nasal bones are extremely small and depressed, and the aperture wide; the average nasal index being 60·8, so they are the most platyrrhine of races.

With regard to the stature, we have not yet sufficient materials for giving a reliable average. Quatrefages, following Barrow, gives 4 feet 6 inches for the men, and 4 feet for the women, and speaks of one individual of the latter sex, who was the mother of several children, measuring only 3 feet 9 inches in height; but later observations (still, however, insufficient in number) give a rather larger stature: thus Topinard places the average at 1·404 metre, or 4 feet 7½ inches; and Fritsch, who measured six male Bushmen in South Africa, found their mean height to be 1·444

metre, or nearly 4 feet 9 inches. It is probable that, taking them all together, they differ but little in size from the Andamanese, although in colour, in form of head, in features, and in the proportions of the body, they are widely removed from them.

There is every reason to believe that these Bushmen represent the earliest race of which we have, or are ever likely to have, any knowledge, which inhabited the southern portion of the African continent, but that long before the advent of Europeans upon the scene, they had been invaded from the north by Negro tribes, who, being superior in size, strength, and civilisation, had taken possession of the greater part of their territories, and mingling freely with the aborigines, had produced the mixed race called Hottentots, who retained the culture and settled pastoral habits of the Negroes, with many of the physical features of the Bushmen. These, in their turn, encroached upon the pure-bred Bantu Negroes from the north, and by the Dutch and English from the south, are now greatly diminished, and indeed threatened with the same fate that will surely soon befall the scanty remnant of the early inhabitants who still retain their primitive type.

At present the habitat of the Bushman race is confined to certain districts in the south-west of Africa, from the confines of the Cape Colony, as far north as the shores of Lake Ngami. Further to the north the great equatorial region of Africa is occupied by various Negro tribes, using the term in its broadest sense, but belonging to the divisions which, on account of peculiarities of language, have been grouped together as Bantu. They all present the common physical characteristics typical of the Negro race, only two of which need be specially mentioned here—medium or large stature, and dolichocephalic skull (average cranial index about 73·5).

It is at various scattered places in the midst of these that the only other small people of which I shall have to speak, the veritable pygmies of Homer, Herodotus, and Aristotle, according to Quatrefages, are still to be met with.<sup>1</sup>

The first notice of the occurrence of these in modern times is contained in "The strange adventures of Andrew Battell of Leigh in Essex, sent by the Portugals prisoner to Angola, who lived there and in the adjoining regions near eighteen years" (1589 to 1607), published in "Purchas his Pilgrimes" (1625), lib. vii, chap. iii, p. 983:—

"To the north-east of *Mani-Kesock*, are a kind of little people, called *Mutimbas*; which are no bigger than Boyes of twelve yeares old, but very thicke, and live only upon flesh, which they kill in the woods with their bows and darts. They pay tribute to *Mani-Kesock*, and bring all their Elephants' teeth and tayles to him. They will not enter into any of the *Maramba's* houses, nor will

<sup>1</sup> The scattered information upon this subject was first collected together by Hamy in his "Essai de co-ordination des Matériaux récemment recueillis sur l'ethnologie des Nègrilles ou Pygmées de l'Afrique équatoriale," "Bull. Soc. d'Anthropologie de Paris," tome ii (ser. iii), 1879, p. 79.

suffer any to come where they dwell. And if by chance any *Maramba* or people of *Longo* pass where they dwell, they will forsake that place and go to another. The women carry Bows and Arrows as well as the men. And one of these will walk in the woods alone and kill the Pongos with their poisoned Arrows."

Battell's narrative, it should be said, is generally admitted as having an air of veracity about it not always conspicuous in the stories of travellers of his time. In addition to the observations on the human inhabitants, it contains excellent descriptions of animals, as the pongo or gorilla, and the zebra, now well known, but in his day new to Europeans.

Dapper, in a work called "*Déscription de la Basse Ethiopie*," published in Amsterdam in 1686, speaks of a race of dwarfs inhabiting the same region, which he calls *Mimos* or *Bakke-Bakke*, but nothing further was heard of these people until quite recent times. A German scientific expedition to Loango, the results of which were published in the "*Zeitschrift für Ethnologie*," 1874, and in Hartmann's work, "*Die Negritier*," obtained, at Chinchoso, photographs and descriptions of a dwarf tribe called "*Babonkos*," whose heads were proportionally large and of roundish form (cephalic index of skull, 78 to 81). One individual, supposed to be about forty years of age, measured 1.365 metre, rather under 4 feet 6 inches.

Dr. Touchard, in a "*Notice sur le Gabon*," published in the "*Révue Maritime et Coloniale*," for 1861, describes the recent destruction of a population established in the interior of this country, and to which he gives the name of "*Akoa*." They seem to have been exterminated by the M'Pongos in their expansion towards the west. Some of them, however, remained as slaves at the time of the visit of Admiral Fleuriot de Langle, who, in 1868, photographed one (measuring about 4 feet 6 inches high) and brought home some skulls, which were examined by Hamy, and all proved very small and sub-brachycephalic.

Another tribe, the M'Boulons, inhabiting the coast north of the Gaboon river, have been described by M. Marche as probably the primitive race of the country. They live in little villages, keeping entirely to themselves, though surrounded by the larger Negro tribes, M'Pongos and Bakalais, who are encroaching upon them so closely that their numbers are rapidly diminishing. In 1860 they were not more than 3,000; in 1879 they were much less numerous. They are of an earthy-brown colour, and rarely exceed 1.600 metre in height (5 feet 3 inches). In the rich collections of skulls made by Mr. R. B. Walker, and by M. Du Chaillu, from the coast of this region, are many which are remarkable for their small size and round form. Of many other notices of tribes of Negroes of diminutive size, living near the west coast of Equatorial Africa, I need only mention that of Du Chaillu, who gives an interesting account of his visit to an Obongo village in Ashango-land, between the Gaboon and the Congo; although unfortunately, owing to the extreme shyness and suspicion of the inhabitants, he was allowed

little opportunity for anthropological observations. He succeeded, however, in measuring one man and six women; the height of the former was 4 feet 6 inches, the average of the latter 4 feet 8 inches.<sup>1</sup>

Far further into the interior, towards the centre of the region contained in the great bend of the Congo or Livingstone River, Stanley heard of a numerous and independent population of dwarfs, called "Watwas," who, like the Batimbas of Battell, are great hunters of elephants, and use poisoned arrows. One of these he met with at Ikondou, was 4 feet 6½ inches high, and of a chocolate brown colour.<sup>2</sup> More recently Dr. Wolff describes under the name of "Batouas" (perhaps the same as Stanley's Watwas), a people of lighter colour than other Negroes, and never exceeding 1·40 metre (4 feet 7 inches) high, but whose average is not more than 1·30 (4 feet 3 inches), who occupy isolated villages scattered through the territory of the Bahoubas, with whom they never mix.<sup>3</sup>

Penetrating into the heart of Africa from the north-east, in 1870, Dr. Schweinfurth first made us acquainted with a diminutive race of people who have since attained a considerable anthropological notoriety. They seem to go by two names in their own country, *Akka* and *Tikki-tikki*, the latter reminding us curiously of Dapper's *Bakke-bakke*, and the former, more singularly still, having been read by the learned Egyptologist, Mariette, by the side of the figure of a dwarf in one of the monuments of the early Egyptian empire.

It was at the court of Mounza, king of the Monbuttu, that Schweinfurth first met with the Akkas. They appear to live under the protection of that monarch, who had a regiment of them attached to his service, but their real country was further to the south and west, about 3° N. lat. and 25° E. long. From the accounts the traveller received, they occupy a considerable territory, and are divided into nine distinct tribes, each having its own king or chief. Like all the other pygmy African tribes, they live chiefly by the chase, being great hunters of the elephant, which they attack with bows and arrows.

In exchange for one of his dogs, Schweinfurth obtained from Mounza one of these little men, whom he intended to bring to Europe, but who died on the homeward journey at Berber. Unfortunately all the measurements and observations which were made in the Monbuttu country by Schweinfurth perished in the fire which destroyed so much of the valuable material he had collected. His descriptions of their physical characters are therefore chiefly recollections. Other travellers—Long, Marno, and Vossion—though not penetrating as far as the Akka country, have given observations upon individuals of the race they have met with

<sup>1</sup> "A Journey to Ashango-land," 1867, p. 315.

<sup>2</sup> "Through the Dark Continent," vol. ii.

<sup>3</sup> "La Gazette Géographique," 1887, p. 153, quoted by Quatrefages.

in their travels. The Italian Miani, following the footsteps of Schweinfurth into the Monbuttu country, also obtained by barter two Akka boys, with the view of bringing them to Europe. He himself fell a victim to the fatigues of the journey and climate, but left his collections, including the young Akkas, to the Italian Geographical Society. Probably no two individuals of a savage race have been so much honoured by the attentions of the scientific world. First, at Cairo, and afterwards in Italy, Tebo (or Thibaut) and Chairallah, as they were named, were described, measured, and photographed, and have been the subjects of a library of memoirs, their bibliographers including the names of Owen, Panceri, Cornalia, Mantegazza, Giglioli and Zannetti, Broca, Hamy, and de Quatrefages. On their arrival in Italy, they were presented to the king and queen, introduced into the most fashionable society, and finally settled down as members of the household of Count Miniscalchi Erizzo, at Verona, where they received a European education, and performed the duties of pages.

In reply to an inquiry addressed to my friend Dr. Giglioli, of Florence, I hear that Thibaut died of consumption on January 28th, 1883, being then about 22 years of age, and was buried in the cemetery at Verona. Unfortunately no scientific examination of the body was allowed, but whether Chairallah still lives or not I have not been able to learn. As Giglioli has not heard of his death, he presumes that he is still living in Count Miniscalchi's palace.

One other specimen of this race has been the subject of careful observation by European anthropologists—a girl named Saida, brought home by Romolo Gessi (Gordon's lieutenant), and who is still, or was lately, living at Trieste as servant to Mde. Gessi.

The various scattered observations hitherto made are obviously insufficient to deduce a mean height for the race, but the nearest estimate that Quatrefages could obtain is about 4 feet 7 inches for the men, and 4 feet 3 inches for the women, decidedly inferior, therefore, to the Andamanese. With regard to their other characters, their hair is of the most frizzly kind, their complexion lighter than that of most Negroes, but the prognathism, width of nose, and eversion of lips characteristic of the Ethiopian branch of the human family are carried to an extreme degree, especially if Schweinfurth's sketches can be trusted. The only essential point of difference from the ordinary Negro, except the size, is the tendency to shortening and breadth of the skull, although it by no means assumes the "almost spherical" shape attributed to it by Schweinfurth.

Some further information about the Akkas will be found in the work, just published, of the intrepid and accomplished traveller, in whose welfare we are now so much interested, Dr. Emin Pasha, Gordon's last surviving officer in the Soudan, who, in the course of his explorations, spent some little time lately in the country of the Moubuttu. Here he not only met with living Akkas, one of whom he apparently still retains as a domestic in his service, and of

whose dimensions he has sent me a most detailed account, but he also, by watching the spots where two of them had been interred, succeeded in obtaining their skeletons, which, with numerous other objects of great scientific interest, safely arrived at the British Museum in September of last year. I need hardly say that actual bones, clean, imperishable, easy to be measured and compared, not once only, but any number of times, furnish the most acceptable evidence that an anthropologist can possess of many of the most important physical characters of a race. There we have facts which can always be appealed to in support of statements and inferences based on them. Height, proportions of limbs, form of head, characters of the face even, are all more rigorously determined from the bones than they can be on the living person. Therefore, the value of these remains, imperfect as they unfortunately are, and of course insufficient in number for the purpose of establishing average characters, is very great indeed.

As I have entered fully into the question of their peculiarities elsewhere,<sup>1</sup> I need give now only a few of the most important and most generally to be understood results of their examination. The first point of interest is their size. The two skeletons are both those of full-grown people, one a man, the other a woman. There is no reason to suppose that they were specially selected as exceptionally small: they were clearly the only ones which Emin had an opportunity of procuring; yet they fully bear out, more than bear out, all that has been said of the diminutive size of the race. Comparing the dimensions of the bones, one by one, with those of the numerous Andamaese that have passed through my hands, I find both of these Akkas smaller, not than the average, but smaller than the smallest; smaller also than any Bushman whose skeleton I am acquainted with, or whose dimensions have been published with scientific accuracy. In fact, they are both, for they are nearly of a size, the smallest normal human skeletons which I have seen, or of which I can find any record. I say, normal, because they are thoroughly well-grown and proportioned, without a trace of the deformity almost always associated with individual dwarfishness in a taller race. One only, that of the female, is sufficiently perfect for articulation. After due allowance for some missing vertebrae, and for the intervertebral spaces, the skeleton measures from the crown of the head to the ground exactly 4 feet, or 1·218 metre. About half an inch more for the thickness of the skin of the head and soles of the feet would complete the height when alive. The other (male) skeleton was (judging by the length of the femur) about a quarter of an inch shorter.

The full-grown woman of whom Emin gives detailed dimensions is stated to be only 1·164 metre, or barely 3 feet 10 inches.<sup>2</sup> These

<sup>1</sup> *l. supra*, p. 3.

<sup>2</sup> In his letters Emin speaks of an Akka man as "3 feet 6 inches" high, though this does not profess to be a scientific accurate observation, as does the above. He says of this man that his whole body was covered by thick, stiff hair, almost like felt, as was the case with all the Akkas he had yet examined.

heights are all unquestionably less than anything that has been yet obtained based upon such indisputable data. One very interesting and almost unexpected result of a careful examination of these skeletons is that they conform in the relative proportions of the head, trunk, and limb, not to dwarfs, but to full-sized people of other races, and they are therefore strikingly unlike the stumpy, long-bodied, short-limbed, large-headed pygmies so graphically represented fighting with their lances against the cranes on ancient Greek vases.

The other characters of these skeletons are Negroid to an intense degree, and quite accord with what has been stated of their external appearance. The form of the skull, too, has that sub-brachycephaly which has been shown by Hamy to characterise all the small Negro populations of Central Africa. It is quite unlike that of the Andamanese, quite unlike that of the Bushmen. They are obviously Negroes of a special type, to which Hamy has given the appropriate term of *Negrillo*. They seem to have much the same relation to the larger long-headed African Negroes that the small round-headed Negritos of the Indian Ocean have to their larger long-headed Melanesian neighbours.

At all events, the fact now seems clearly demonstrated that at various spots across the great African continent, within a few degrees north and south of the equator, extending from the Atlantic coast to near the shores of the Albert Nyanza (30° E. long.), and perhaps, if some indications which time will not allow me to enter into now (but which will be found in the writings of Hamy and Quatrefages), even further to the east, south of the Galla land, are still surviving, in scattered districts, communities of these small Negroes, all much resembling each other in size, appearance, and habits, and dwelling mostly apart from their larger neighbours, by whom they are everywhere surrounded. Our information about them is still very scanty, and to obtain more would be a worthy object of ambition for the anthropological traveller. In many parts, especially at the west, they are obviously holding their own with difficulty, if not actually disappearing, and there is much about their condition of civilisation, and the situations in which they are found, to induce us to look upon them, as in the case of the Bushmen in the south and the Negritos in the east, as the remains of a population which occupied the land before the incoming of the present dominant races. If the account of the Nasamonians related by Herodotus be accepted as historical, the river they came to, "flowing from west to east," must have been the Niger, and the northward range of the dwarfish people far more extensive twenty-three centuries ago than it is at the present time.<sup>1</sup>

<sup>1</sup> Mr. R. G. Haliburton, in a letter addressed to the Secretary of the Royal Society, dated Oran, May 20th, 1888, part of which appeared in "Nature," for May 31st, speaks of the recent discovery of a dwarf race, only 4 feet high, "natives of Akkah, an extensive but secluded and unknown district, situated some hundreds of miles south of the southern limits of the Empire of Morocco, and bounding on the desert of Sahara and the Draah country."

This view opens a still larger question, and takes us back to the neighbourhood of the south of India as the centre from which the whole of the great Negro race spread, east over the African continent, and west over the islands of the Pacific, and to our little Andamanese fellow subjects as probably the least modified descendants of the primitive members of the great branch of the human species characterised by their black skins and frizzly hair.

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DR. TYLOR on MARRIAGE SYSTEMS and LAWS of DESCENT.

Dr. E. B. TYLOR recently gave a lecture in the Theatre of the Museum at Oxford on a subject which is likely to be the focus of a good deal of controversy among anthropologists within the next few years, with the view of applying a strict scientific method to the discussion of the early development of the laws of Marriage and of Descent. Dr. Tylor has, with the labour of many years, compiled tabular statements of the marriage systems of some 360 tribes and nations; he has classified his schedules by what he calls the "method of adhesions," which shows to what extent any definite rule co-exists with other rules not obviously connected with it. As a first test of this statistical method, he brought forward the quaint barbaric custom which forbids the husband and his wife's parents to speak to or look at one another, or to mention one another's names. About seventy peoples practise this custom or the converse one—that a wife and her husband's relations ceremonially cut one another. Now a classification of the marriage-rules of mankind shows a widespread and marked distinction between the nations in which the husband goes to live with his wife's family and those in which he takes his wife away to his own home. Dr. Tylor's tables show conclusively that the custom of avoidance between the husband and his wife's family occurs almost exclusively in nations of the first kind, and this at once suggests the explanation of the custom; for as the husband is an interloper in the family he must not be treated as a member of it; in fact he is not "recognised." Another closely allied custom is that of naming the father after the child; for instance, Moffatt the missionary was known to many South African tribes only as *Ra Mary*, "the father of Mary." Dr. Tylor confessed to having been astonished when his tables made it clear for the first time that the tribes who do this are the same who live in their wives' families and avoid their wives' relatives, but he suggested that the explanation could be found in the proceedings of the Cree Indians of Canada, among whom the husband, though living in his wife's house, may never speak to his father-in-law or

mother-in-law till his first child is born. This event alters the whole situation, for, though the father is not a member of the family, his child is, and confers on him the status of "Father-of-so-and-so," which becomes his name, and the whole is brought to a logical conclusion by the family ceasing to cut him.

This method of tracing the connection between customs was applied to the discussion of the two great social systems, the patriarchal under which we live, and the matriarchal in which descent and inheritance follow the mother's side, and the natural guardian of the children is the maternal uncle. Dr. Tylor was able to bring very strong evidence in favour of the more primitive character of matriarchy, by showing that there are survivals of matriarchal institutions in patriarchal tribes, thus confirming the conclusions of Bachofen, McLennan, Lubbock, and Fison. He gave one interesting experience of Major Powell of the American Bureau of Ethnology, who has seen the hunters of a matriarchal tribe driven by scarcity of game to wander to a distance, taking their wives with them, and becoming there and then the founders of a patriarchal family.

The "method of adhesions" also clears up a number of doubtful points in the institution of exogamy, which compels a man to marry outside his own clan or class, so that a man of the Bear Clan may not marry a Bear but may marry a Hawk. This institution is very widely distributed, and there occurs also a system of relationship names entirely different from ours, to which the Hon. L. H. Morgan, who became acquainted with it among the Iroquois Indians, has given the name of the "classificatory system." In it not only a man's real father but his father's brothers are reckoned as fathers, and his mother's sisters are all his mothers, whereas his mother's brothers and his father's sisters are only uncles and aunts; similarly among what we call first cousins some are called brothers and sisters, the rest being mere cousins. Some years ago the Rev. Lorimer Fison pointed out that this eccentric custom is really derived from exogamy, those first cousins who, being of the same clan cannot marry, being reckoned as brothers and sisters. Dr. Tylor refuted by means of his statistics several explanations which have been proposed to account for exogamy, and expressed his belief in one, namely, that even the most barbaric races know that no permanent alliance offensive or defensive can be made with another tribe except through intermarriage. A small tribe surrounded by hostile neighbours has only two alternatives, to marry out or be killed out. Exogamy is thus an early method of political self-preservation.—From the "Oxford Magazine," June 13th, 1888.

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APPARENT SURVIVAL of a HUMAN PAIRING SEASON.

[Extract from a memoir on "The Life Statistics of an Indian Province," by Mr. S. A. HILL, Allahabad, published in "Nature," July 12, 1888. A few trifling verbal alterations have been made to adapt it to its present form.—ED.]

WHEN the birth statistics are analysed with reference to the annual period, striking and curious results are brought out. The numbers registered, when tabulated month by month, corrected (for certain causes of error by a method fully explained in the memoir from which this is an extract), and thrown into the form of average rates per thousand per annum, give the following table:—

Month.		Males.		Females.		Total.		Number of Males to 100 Females.
January	...	22.67	...	21.92	...	44.59	...	103.42
February	...	22.31	...	21.53	...	43.84	...	103.67
March	...	20.72	...	19.95	...	40.67	...	103.86
April	...	20.17	...	19.30	...	39.47	...	104.51
May	...	18.46	...	17.64	...	36.11	...	104.65
June	...	15.12	...	17.30	...	32.43	...	104.74
July	...	20.80	...	19.70	...	40.50	...	105.59
August	...	25.81	...	24.72	...	50.53	...	104.41
September	...	28.85	...	27.86	...	56.71	...	103.55
October	...	25.30	...	27.41	...	52.71	...	103.25
November	...	25.89	...	25.15	...	51.04	...	102.94
December	...	25.36	...	24.88	...	50.24	...	101.52
Year	...	23.12	...	22.28	...	45.40	...	103.77

From the existence of the *Holi* festival among the Hindus, and of similar spring festivals, accompanied with lascivious songs and dances, among many barbarous tribes, as well as from the traces of such festivals still surviving in Europe, and the hints given by classical writers regarding the nature of certain annual religious mysteries performed by the early Greeks and Romans, anthropologists have thought that possibly, during pre-historic times, the human species, like the lower animals in a state of nature, had an annual pairing-time. If any traces of such a condition still survive, we may with some confidence look for them in India, where a large number of the poorer classes are chronically on the verge of starvation, and the different seasons are sufficiently marked in character to affect people differently both in body and in mind. The birth-rates in the above table exhibit a most distinct annual variation, smoother and more uniform in character than any of the mortality curves, and with a range equal to nearly 50 per cent. of the mean value. The minimum falls in June and the maximum in September,—dates which point to a maximum of conceptions in December, and a minimum in September. The latter month is near the end of the long and depressing hot season, when malarial influences are rapidly increasing to a maximum, the food-supply of the year is nearly exhausted, and the vitality and energy of the people have reached low water mark. In December, on the other hand, not only is the salubrity of the country greatly increased as shown by the rapid diminution of nearly every cause of death, but food is again cheap and abundant. The crops of millet, on

which the poorer classes live, are sown in July and reaped in November. During December and the latter half of November they are threshed out, and then is the season for paying the village functionaries and labourers their share of the produce. Consequently food is more abundant at this time of the year than at any other, and as a result of these conditions we find a large number of births the following September and October.

It thus appears that among the poorest of the population there is probably still a more or less distinct annual reproductive season, but instead of being determined by the returning warmth of spring, as must have been the case in pre-historic Europe, it follows the annual return of healthy conditions with abundant food supply. That the *Holi* festival occurs in spring, instead of in December, is perhaps to be accounted for as a survival from a time when the ancestors of the Hindus lived in a colder climate.

#### *The Dieyerie Tribe, South Australia.*

THE following is an extract from a letter addressed by Mr. S. Gason, of Beltana, South Australia, to Mr. J. G. Frazer, of Cambridge, in reply to an enquiry chiefly to ascertain whether sexual intercourse (as distinct from marriage) is permitted within the totem class. "This," writes Mr. Frazer, "is an important distinction which is generally overlooked by writers who describe totem tribes. Usually they merely say that a man may not marry a woman of his own class. Now on the hypothesis of the origin of exogamy proposed by the late J. F. McLennan in a recent number of the 'English Historical Review,' one would expect that though *marriage* within the totem class was always prohibited, sexual intercourse was formerly permitted, and we would expect to find traces of this permission surviving in the shape either of a general laxity in the sexual relations of members of the same class, or of special relaxations granted at certain times, as at *corrobories*. So far as Mr. Gason's present evidence goes, no such traces exist among the Dieyerie."

Mr. Gason's reply is as follows:—

"With regard to your enquiries as to whether the members of the same branch (class or totem) are allowed to marry, I reply certainly not; nor do they have sexual intercourse with each other, as it is an abomination in the eyes of the tribe, and strictly against their laws and customs. To have sexual intercourse with the same branch or totem would be equal to incest, and would be called 'booyooloo-parchana,' which would be a terrible accusation, and the word would only be made use of in a state of frenzy or in a dreadful quarrel. Punishment of the above case would be death on the man's part, and the severe punishment of the woman. There is no doubt that men and women of the same branch or totem,

*i.e.*, a man Rat and a woman Rat, may have sexual intercourse in a secret way, but incest is unheard of, and I cannot believe that such a case ever happened. See how Nature or Providence has guided these aboriginal savages to most beautiful and grand moral laws. No race, in my opinion, are more affectionate to their near blood relations and show greater reverence to their parents and offspring; although adultery amongst opposite branches or totems, *i.e.*, Emu and Dog, is common and a daily occurrence, and is not considered a crime. If adultery is found out, an ordinary fight follows with only those directly concerned.

"With regard to your other enquiries respecting the objection some savages have to seeing blood, it is quite the reverse here, as in the ceremony of "willyaroo" the young man after going through the usual mutilations, *i.e.*, having horizontal deep cuts in the nape of the neck, a spray of blood is injected from the arms of several chiefs on to the man's body, until the whole and every part of his frame is covered with blood. The blood on the young man must not be rubbed off, but must *wear* off, and he cannot appear nor must he be seen by either woman, child, or uncircumcised boys. A piece of wood about nine inches long, two and a half wide, and a sixteenth of an inch thick, with a hole at one end, and a piece of string made of human hair about nine feet long is given to the young man by one of the chiefs. The young man must twirl this stick, "yuntha," round his head as he travels in the day. The twirling of this stick causes a humming noise; this they believe causes a large harvest of iguanas. The reason for this spray of blood being spurted over the young man is to instil into his mind that if ever he should be wounded in battle or fighting, and see the blood run from his wounds, he should not be faint-hearted, but should say, 'This little blood is nothing, for I have had the whole of my body covered in blood and I was not frightened; why then should I be faint-hearted now on seeing a little blood?'

"With regard to the menstruation the aborigines think that the devil (cootchie) causes this as a curse upon women for their infidelity. While the menstruation is on they are prohibited from eating fish of all kinds, and are considered filthy and exceedingly low until they are free from it, but are not considered dangerous and<sup>1</sup> avoided by man.

"Any diseases arising from the above are on all occasions treated by women, and under no circumstances does man interfere."

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<sup>1</sup> Mr. Gason first wrote *but* instead of *and*; from this it would seem that the negative is not meant to apply to the last sentence.—J.G.F.

SOME RECENT PUBLICATIONS *of the BUREAU of ETHNOLOGY,*  
WASHINGTON, D.C., U.S.A.

THE Bureau of Ethnology, Washington, continues to issue from time to time most valuable tracts in connection with American anthropology. Five of these lie before us, each deserving the attention of English anthropologists, although two of them will chiefly interest philologists, for they consist solely of a catalogue of books relating to the Eskimo and Sionan languages, and it will surprise many to find that the bibliography of these little known tongues is sufficient to fill respectively 116 and 87 closely printed pages.

These are the first instalments of that, which (judging by these) seems likely to be the gigantic work undertaken by Mr. Pilling, of cataloguing "the works relating to each of the more important linguistic stocks of North America." Mr. Pilling certainly deserves the hearty thanks of ethnologists for thus bringing before them the large amount of extant literature relating to a race which of late years has excited so much interest on account of the theory of Mr. Boyd Dawkins, who sees in the Eskimo the lineal descendants of the cave men of Europe. In his preface, Mr. Pilling says that "people speaking the Eskimo language are more widely scattered, and with perhaps two or three exceptions, cover a wider range of territory than those of any other of the linguistic stocks of North America. From Labrador, on the east, their habitations dot the coast line to the Aleutian Islands, on the west, and a dialect of the language is spoken on the coast of North-eastern Asia. As far north as the white man has gone, remains of their deserted habitations are found, and southward they extend on the east coast to latitude 50°, and on the west coast to latitude 60°. Within this area a number of dialects are spoken." Again Mr. Pilling says, "The vocabularies collected by Nordenskiöld near Behring Straits contain Sandwich Island words, imported by sailors on whaling vessels, which words have come into general use among the Indians of that region." This is a curious fact, and seems to show that language cannot be trusted as a racial distinction, especially in modern times.

As regards the Sionan languages, Mr. Pilling says the publications relating to it "cover, perhaps a wider range than those of any other linguistic group of North America," and it is interesting to find that the earliest vocabulary was compiled about 1680, by Hennepin. It is gratifying to know that the British Museum contains the best collection of Arctic literature, and as regards texts in both the Eskimo and Sionan languages, ranks next to the collection of Major Powell of Washington.

In "Perforated Stones from California" Mr. Henry W. Henshaw, gives an interesting essay on the varieties and uses of these stones, not only in California but in other parts of the world. The use of perforated stones attached to sticks in digging, is shown as used in South Africa, and in various groups of islands in the Pacific, as

well as in different parts of North America. There are also perforated stones which are used in games, some again as net sinkers, hammers, axes, and clubs, whilst others, of a more fanciful shape, are found mounted on staves and adorned with feathers, as symbols of authority, not only in California but also in Africa and New Guinea. Many star-shaped stones are found in ancient Mexico and Peru, as also copper implements of the same shape. One at least of these has been found mounted on a handle, but whether it was used as a weapon, or as a symbol of authority remains doubtful. That some of these perforated stones were attached to thongs and used as weapons, seems probable, and doubtless the so-called ceremonial or banner stones had a double use, for whilst they might when attached to staves, be stuck in the ground as symbols of authority, they would, especially when secured to the staves by gum or thongs of leather, form formidable weapons, wherewith any one resisting the authority of the chief might be instantly killed. Mr. Henshaw has brought together an immense number of authorities with regard to the various uses of these perforated stones, and the geographical distribution of the various types is worthy of notice.

"The Use of Gold and other Metals among the Ancient Inhabitants of Chiriqui, Isthmus of Darien," by William H. Holmes, is the title of another of these interesting pamphlets, in which the author discusses the varieties of metal known to the ancient inhabitants of the Isthmus, and the use of gold, silver, copper, and bronze in forming those curious and characteristic figures so well known to antiquaries; the gold appears to have been always more or less alloyed with copper, and it is remarkable that most of the manufactured articles seem to have been either plated or washed over with pure gold, whilst the body or foundation was of base gold or of nearly pure copper. These objects are mostly found in graves, and were evidently used as charms or ornaments, having usually rings for suspension; they consist chiefly of animal forms, some very grotesque. There are many problems connected with these curious relics, the chief being the mode of construction and joining of the several parts, the manner of plating or washing them with gold, and whether they were of native or foreign manufacture. With regard to the bronze articles, Mr. Holmes says, "We have no information in regard to the origin of the tin. It is not found in a native state, and since it seems hardly probable that the Chiriquians understood smelting ores, we are left in doubt as to whether it was obtained from more cultured nations to the north or south, or from Europeans." Mr. Holmes does not assign a very high antiquity to these curious relics, but the fact that in most cases the human remains with which they have been interred are entirely destroyed by time, would seem to denote the contrary, especially as the graves appear to have been excavated at a considerable depth, sometimes as much as eighteen feet from the surface, the body and articles buried with it being very carefully closed in with slabs of stone, and the pit filled up with loose stones and rubble, brought, it is

said, from a great distance. Among the metal objects found are small bronze bells of different shapes, gilded, and almost the only objects besides those of metal, are of stone and clay, the latter very abundant.

The fifth pamphlet on our list contains an account by Cyrus Thomas of the work carried on in mound exploration by the Bureau of Ethnology, and is especially valuable because of the care with which the work is carried out, and the minuteness of the records made of the several finds. The area examined consists of part of the United States, east of the Rocky Mountains, adjoining British territory, which is regarded as forming a well-marked archæological area, embracing the valley of the Mississippi from Wisconsin southward, Ohio, southward through Kentucky to Mississippi, and the valleys of Eastern Tennessee, and Western North Carolina, thence southward through Georgia and Alabama to Florida. The number of specimens already obtained is not less than thirty-eight thousand.

Among the finds are many objects quite modern, such as silver brooches, &c., one with 'Montreal' stamped upon it, iron knives, brass kettles with iron handles, glass beads, and other things of recent use; also in comparatively modern Indian graves, sleigh bells or hawk bells of copper, with pebble and shell bead rattles, all of the same pattern and finish, though found in graves of different ages, and at widely different points. These should be compared with those from Chiriqui mentioned above, and with the ancient Mexican examples. From the discoveries made, Mr. Thomas comes to the conclusion that "the links discovered, connecting the Indians and mound builders, are so numerous and well established, that there should be no longer any hesitancy in accepting the theory that the two are one and the same people," also "that the statements of the early navigators and explorers as to the habits, customs, circumstances, &c., of the Indians when first visited by Europeans, are largely confirmed by what has been discovered in the mounds and other ancient works;" that the discoveries are against the theory that the mound builders were Mayas or Mexicans, or Pueblo tribes from New Mexico, and that although some of the relics belong to the remote pre-historic past, the European influence in many is so pronounced, as to prove them to have been built since the Spanish conquest. We are, however, promised a grand work upon the subject, now nearly ready, with maps and profuse illustrations, which will make these points clear, and set at rest the various theories which have been broached from time to time without sufficient knowledge.

A. W. BUCKLAND.

*The PRIMITIVE HUMAN HORDE.*

*To the Editor of the "Journal of the Anthropological Institute."*

SIR,

I have no intention of continuing the discussion on this subject, as I have nothing to alter in my former letter. My object was to show, what I still maintain, that Mr. Gomme had signally failed to establish the former existence of such a "primitive group" as Dr. McLennan's hypothesis requires; and that, if his reasoning throws any light on the nature of the primitive group, it favours the idea that its members were blood relations and did not intermarry. In answer to his enquiry, I may say that, while I admit the Abors may have retained "some very primitive characteristics during the time they were advancing," I certainly deny, what Mr. Gomme affirms, that "internally there are no traces [among the Abors] of the cohesion resulting from the ties of recognised kinship."

It has become customary to refer to primitive man as having had none of the restraints on sexual intercourse found in civilised societies. It was, in great measure as a protest against this view, notwithstanding the high authority on which it is held, my criticism of Mr. Gomme's paper was written. I hope that during the present year will be published the result of my enquiries on "Marriage and Kinship" among primitive peoples, when Mr. Gomme will be able to see the grounds on which I contend that "totemism and exogamy imply the existence of kinship by blood."

Yours obediently,

Welton, Yorkshire.

C. STANILAND WAKE.

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INTERNATIONAL CONGRESS OF AMERICANISTS.

THIS Congress will hold its seventh session in Berlin, commencing on October 2nd. It will be under the presidency of Dr. Reiss, who is the President of the German Society for Anthropology, Ethnology, and Prehistoric Archaeology. The Vice-Presidents are Professors Virchow, Bastian, and Baron Von Richthofen. The work of the first day is to bear upon the discovery of the New World, the pre-Columbian history of America, and American geology. The second day will be devoted to archaeology; the third to anthropology and ethnography; and the fourth to philology and palæography.

The following subjects are put down for discussion under the head of "Anthropology and Ethnography":—Geographical provinces, illustrated by the ethnology of America (Reporter, Dr. Bastian). Nomenclature of the peoples and tribes of America before the conquest: Ethnographical map of the territory occupied by each: Anthropological classification of the ancient and modern

savages of America: Craniological atlas (Reporter, Prof. Virchow). Can the study of the hair serve to determine the question of the unity or plurality of the American race? (Reporter, Dr. Fritsch). Do our present craniological studies allow us to affirm that the American races existed in America from the quaternary period, and that the conformation of their crania was the same as that of the Indians of the present day? (Reporter, M. Cora). Can we say that all the varieties of the American race are indigenous to America, and have not been subjected to essential alteration by foreign influences? (Reporter, M. Cora). On the artificial deformation of crania among the ancient American tribes compared with the deformations at present practised among the peoples of Asia, Europe, and the Pacific Islands (Reporter, Dr. Virchow). Does there exist among the Indians of the N.W. coast of America distinctive characteristics indicating affinities with Asiatic tribes? (Reporter, M. Aurel Krause). Anthropology of the people inhabiting Mexico at the time of Cortez (Reporter, M. Hartmann). Morals and law in ancient Mexico (Reporter, M. Grossi). Anthropophagy and human sacrifices in pre-Columbian America (Reporter, M. Grossi). Cremation in America before and since the time of Columbus (Reporter, M. Grossi). Races of domestic animals in ancient Peru (Reporter, M. Nehring). Cultivated plants among the ancient Peruvians (Reporter, M. Wittmack).

All communications relating to the Congress should be addressed to Dr. Hellmann, General Secretary to the Organising Committee, 120, Königgrätzer Strasse, Berlin, S.W. The subscription for membership (10s.) should be sent to the Treasurer, Consul-General W. Schönlanck, 71, Köpnicker Strasse, Berlin, S.O.

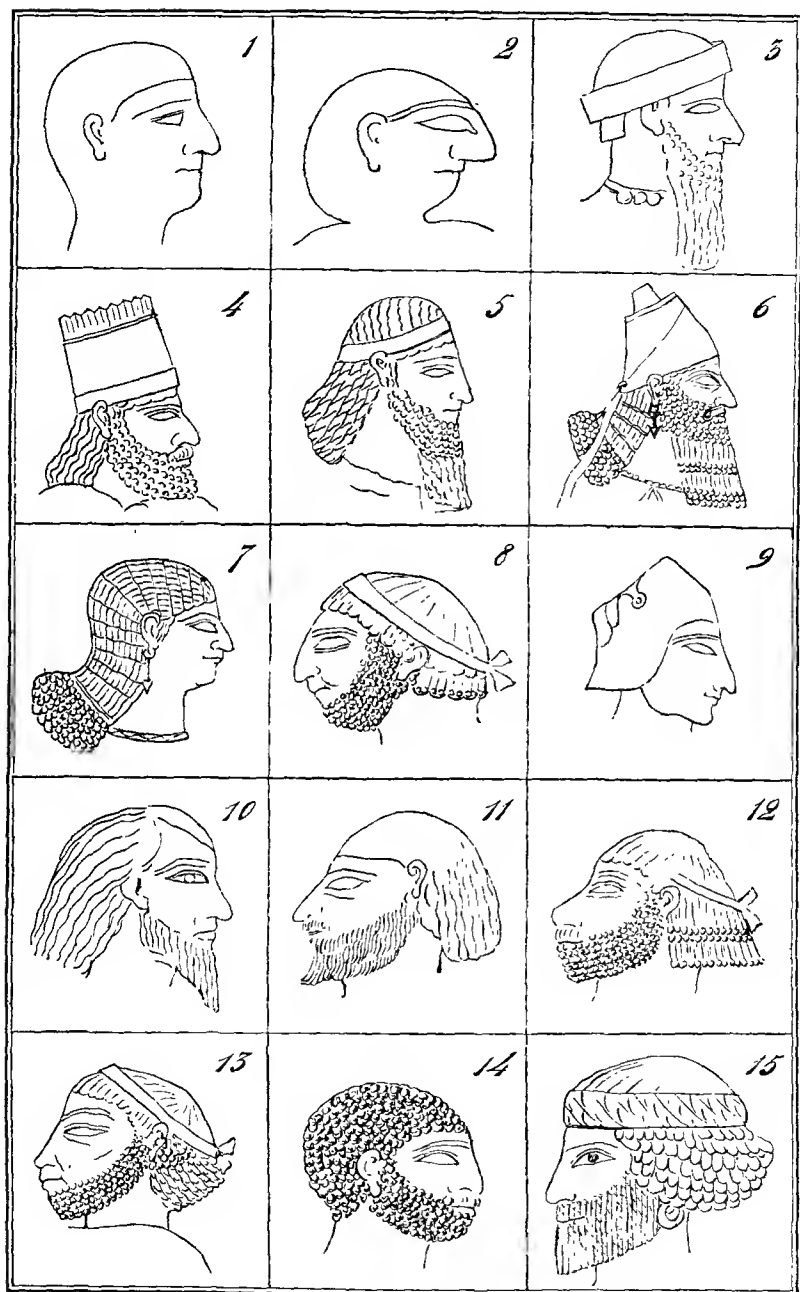
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#### THE BRITISH ASSOCIATION.

THE fifty-eighth annual meeting will be held at Bath under the presidency of Sir Frederick J. Bramwell, F.R.S., commencing on September 5th. The section of anthropology will be presided over by Lieut.-General A. H. Pitt-Rivers, D.C.L., F.R.S. The Vice-Presidents of this section are Dr. J. Beddoe, F.R.S., and Dr. J. Evans, F.R.S. The Secretaries are Mr. G. W. Bloxam, who will act as Recorder, and Dr. J. G. Garson.

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PROFILES FROM THE ASSYRIAN AND BABYLONIAN MONUMENTS.

THE JOURNAL  
OF THE  
ANTHROPOLOGICAL INSTITUTE  
OF  
GREAT BRITAIN AND IRELAND.

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MARCH 13TH, 1888.

FRANCIS GALTON, Esq., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The following presents received since the last meeting were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From the AUTHOR.—Il Tabù. By Giulio Barroil.

From T. V. HOLMES, Esq., F.G.S.—The Essex Naturalist. No. 12. December, 1887.

From the DIRECTOR OF THE UNITED STATES GEOLOGICAL SURVEY.—Mineral Resources of the United States. 1886. By David T. Day.

From the ROYAL SCOTTISH GEOGRAPHICAL SOCIETY.—The Scottish Geographical Magazine. Vol. iv. No. 3.

From the BATAVIAASCH GENOOTSCHAP VAN KUNSTEN EN WETENSCHAPPEN.—Tijdschrift voor Indische Taal-, Land- en Volkenkunde. Deel xxxii, Aflevering 2.

From the ACADEMY.—Zbiór wiadomości do Antropologii Krajowej wydawany staraniem Komisji Antropologicznej Akademii Umiejętności w Krakowie. Tom. xi.

From the ACADEMY.—*Rocznik Zarzadu Akademii Umiejetności w Krakowie*. Rok 1886.

From the INSTITUTE.—Report of the Council of the Royal Colonial Institute for the year 1887.

From the UNIVERSITY.—Calendar of the Imperial University of Japan for the year 1887-88.

From the SOCIETY.—Proceedings of the Society of Biblical Archæology. Vol. x. Part 4.

— Journal of the Society of Arts. Nos. 1841, 1842.

— Proceedings of the Royal Geographical Society. 1888. March.

From the EDITOR.—*Nature*. Nos. 957-959.

— *Science*. Nos. 263, 264.

— *The Photographic Times*. Nos. 336.

— *L'Homme*. 1887. Nos. 22-24.

— *Bullettino di Paletnologia Italiana*. Tom. iii. N. 11 e 12.

#### EXHIBITION of TERRA COTTA TABLETS from BABYLONIA.

By CUTHBERT E. PEEK, Esq., M.A. (Described by T. G. PINCHES, Esq.)

A COLLECTION of Babylonian clay tablets belonging to Sir H. Peek, was, in the absence of Mr. C. E. Peek, exhibited by Mr. T. G. Pinches, of the Department of Egyptian and Assyrian Antiquities, British Museum. Most of these tablets, which had been copied, translated, and commented upon by him, came, he said, from Abu-habbah, the ancient Sipar or Sippar of the Sungod, identified with Sippara and Sepharvaim. The earliest of these documents bore the name of Samsu-satana, a King of Babylonia who reigned about 1969 B.C. This tablet was the smallest in the collection, being only  $1\frac{1}{8}$  inch by  $1\frac{3}{16}$  inch. It referred, apparently, to a sale of oxen, and was dated "the 21st day of Iyyar of the year when Samsu-satana the King (was) in capturing before the land of Aa." It could not, however, be said that the translation of this date was quite certain; but if, by chance, it turned out to be correct, it would furnish an additional historical fact as to this little-known King of Babylonia. The next tablet in chronological order was dated in the 14th year of Nabopolassar, and referred to certain weaving done for the temple of the Sungod at Sippara or Sepharvaim, which city appeared to have been one of the centres of the weaving industry in Babylonia in ancient times. In referring to this tablet the speaker mentioned that the Babylonian representative of the very word used in Josh. vii, 21, where the "goodly Babylonish garment" (*addereth Shin'ar*) was spoken of, actually occurred in a list of words designating clothing of various kinds, from Assyria. The Babylonian form of the word was *âdirtu*. Other

texts were an account of the number of cattle in the possession of the shepherds of the Sungod on the 10th day of Tisri, in the 13th year of Nabonidus (542 B.C.); the amount of taxes due from certain Chaldeans in the district of Sippara or Sepharvaim on the 15th of Elul of the 14th year of Nabonidus (541 B.C.); a small tablet referring to a payment "from the house of hands" to a man named Nabû-êdir-napsāti, on the 21st day of Sebat of the 14th year of Nabonidus; a tablet apparently referring to the payment of tithes to the temple of the goddess Gula at Sippara, on the 11th day of Ab in the 14th year of Darius (506 B.C.); and a larger tablet referring to the arrangements made for supplying meat to the great temple of the Sungod at Sippara, dated the 15th day of Tisri in the 22nd year of Darius (498 B.C.). The other three tablets were undated, and were respectively a list of amounts paid, with the names of the payers; data to enable a scribe to draw up a contract for the sale of a field; and a private letter. As this last-named was short and interesting, the speaker read the translation he had made of it, which ran as follows: "Tablet from Gimillu to Nergal-uballit, my brother. May Bel and Nebo bespeak peace and life for my brother. I am just sending to thee, [Cause the seed], 600 *gur* . . . . [to be brought] . . . . says thus: 'I have seen the amount of the seed with Nergal-uballit.' Šamaš-iddina, the scribe of Sipar, will send to Babylon. I will send Šamaš-iddina to thee on the 21st day. Cause the seed, 500 *gur*, to be brought."

In commenting upon these texts, Mr. Pinches spoke of the opulence of the great shrines of Sippara or Sepharvaim, the importance of this twofold—or, rather, fourfold—city, with its glorious temples and palaces, the enormous receipts of the priests of the various temples, and the wealth of the inhabitants, as shown by the many thousands of tablets now in the British Museum, of which Sir H. Peek's texts, which he had translated, were a very fair sample. As an example of the linguistic value of these tablets, the speaker mentioned the word *niggu* or *niga*. This word, he said, was Akkadian, and apparently meant first "anything," then "everything," and from this latter meaning "property" or "wealth." This word had a Babylonian equivalent, namely, *mimnu* or *memnu*, possibly weakened from *mammnu*, the plural being *memmeni* or *memeni*, probably weakened from *mammāni* or *mamāni*. This last was probably the Assyro-Babylonian form of the well-known word Mammon, "riches;" and if the etymology now given proved to be correct, a satisfactory explanation of a word long regarded as very difficult had been at last obtained.

The following paper was read by the Author :—

*The RACES of the BABYLONIAN EMPIRE.*

By G. BERTIN, M.R.A.S.

[WITH PLATE VI.]

WHEN I undertook, at the suggestion of Mr. R. Poole, to write the present paper, I did not realise the difficulties which I had to encounter. Accepted ideas, and, I might add, scientific prejudices, have always a great influence over our mind, and are hard to be given up. In this particular case the conclusions at which I have arrived are so thoroughly different from, and even opposed to, the accepted notions, that I hesitated a long time before surrendering myself to the evidence.

Babylonia, unlike Egypt, is not a region isolated by its geographical position, but on the contrary is an open country offering a vast frontier to the intrusion of new races. For this reason it is difficult to consider Babylonia by itself, and I have been obliged to extend my inquiry over the whole of the Babylonian Empire. This area covers the vast region extending from the Persian Gulf and the Red Sea in the south to the mountains of Armenia in the north, and from the Mediterranean Sea in the west to the mountain range in the east from Armenia to Persia. We have in this area two distinct centres of civilisation and wealth, one in Southern Babylonia, and the other in Syria.

Two causes provoke the displacement of population, namely, the wish for plunder and the pressure from a more powerful nation. Babylonia being a wealthy, civilised, and open country, was liable to invasions from both these causes, and we must therefore expect a very mixed population. Syria was, by its geographical configuration, better fitted for resistance, but was never politically organised, and had likewise to submit to invasions from the two causes, and it therefore presents also a mixed population.

Before giving a review of the types on the monuments, a few words are indispensable on the characters of these representations.

The greatest numbers of the monuments recovered are from Assyria; the explorations in Babylonia proper have never been carried on systematically or scientifically. This is to be regretted, because the really Babylonian representations are scarce, and for the types of Babylonia we have to depend often on the Assyrian bas-reliefs. The sculptures of the two countries, Assyria and Babylonia, belong, however, to the same school, so to say. They are more realistic in many ways

than the Egyptian pictures, though they are also more conventional in some points. As in Egypt, so here, the faces are represented in profile with eyes in full face.<sup>1</sup> The artists appear to have given great care to the representations of the facial types, but the bodies of all the different peoples are exactly the same; they differ simply in their dress. We cannot even depend on the comparative stature, for often the height merely indicates importance. The King, for instance, is always represented taller than his soldiers. It is also to be noticed on the bas-reliefs that in many cases the artists did not take so much care when they represented a man of the lower class or an enemy; these being often roughly drawn.

In Assyria we find two principal types well distinguished; the one the known Ninevite type illustrated by the representations of the Kings and their soldiers and attendants; and the other a low type, varying very much with the individuals, and found only among the people of inferior condition.

The first type presents a long head, straight forehead, slightly curved nose hanging a little over the upper lip, lips variable but often thin. Assyrians appear to have worn wigs, but, judging from those of the lower class having the same type, their hair was wavy; and we may suppose that they were of medium stature (Pl. VI, figs. 6 and 7).

The other type gives, as just noticed, many varieties, but the general characteristics are as follows:—Small round head, low slanting forehead, high cheek bones, prognathism more or less marked, but with lips often thin and a chin sometimes retreating or slanting back. The nose is often large and does not appear to have ever been flat and wide as among the Tatars; eyebrows often very prominent; generally frizzy hair and beard; stature short (fig. 8).

In Babylonia proper, though the monuments known to us are less numerous, we obtain more varied types.

The oldest, which is given by the monuments found at Tello, by M. de Sarzec, I will provisionally call *Gurian*, from the primitive national name of the Akkadians. This name is very defective, I know, and I would have adopted that of Tello, if the type had been exclusively found on the monuments of that city, which is not the case. The general characteristics of this *Gurian* type are: round head, low but wide and straight forehead, slightly prominent cheek bones, profile orthognate with rather fleshy lips, and a big nose, not aquiline; hair rather curly

<sup>1</sup> It is this fact which gave the false notion of oblique eyes in the Babylonian race, but the error of this notion is easily shown by the faces of the man-headed bulls and the few Assyrian statues.

than wavy; probably medium stature (fig. 1). This type, which appears on the monuments of Tello, and was, no doubt, that of the hero generally known under the name of Gisdubar, who is represented on many seals, seems to have disappeared before the historical period, though the portrait of Hammurabi, now in the British Museum, and of which fig. 3 is a faithful copy, has preserved most of the characteristics.

A type slightly different is offered by the portrait of Marduk-nadin-akhe (fig. 4). It is the same shaped head,<sup>1</sup> but the profile is different, the eyebrows being more prominent and the nose smaller, with a tendency to prognathism.

Another well defined type is the one of the Babylonians at the time of Assurbanipal. They fought in the army of the Assyrian King, but are easily recognised by their costume (fig. 5). The general characteristics are: long egg-shaped head, high forehead straight and wide, profile orthognate, flat cheeks, nose rather long but never curvy or aquiline, lips moderately thick, hair wavy, high stature. The general expression of the face is quiet and smiling, and well in agreement with the general moral character of the Babylonians; it has nothing of the stern and, I might say, brutal expression of the Ninevites.

The existence in Babylonia of the same low type, already noticed in Assyria, cannot be denied. We find it on some of the oldest monuments discovered at Tello (fig. 2), and it is easily recognised in spite of the roughness of the drawings. We detect it also among some of the Babylonian soldiers serving in the Assyrian armies.

In Elam, the great mass of the population seems to have belonged to this very type (figs. 12 and 13). It offers, however, a great many varieties; sometimes the prognathism is much developed, sometimes the forehead is nearly straight, though very low; sometimes the nose is very much depressed, and in other cases ridiculously big for the size of the head. A nobler type is presented by a small minority, the ruling family and perhaps the higher class or aristocracy. In many faces of the low type the expression is, however, intelligent, though in some cases there is a savage and cruel stamp (fig. 11).

In Syria we find equally two types. One is a variety of the low type already described and illustrated by the Jews captured at Lachish by Sennacherib (fig. 14) and by the Phœnician sailors on a bas-relief in the British Museum. The head is round, the forehead low and retreating but the nose is rarely much developed, and in many cases the lips are thick, the hair is frizzy, and the stature often medium.

<sup>1</sup> As it will be seen, this type does not, however, proceed from this precedent.

The other type is that of the Jews, as far as can be judged from the black obelisk. That a higher type existed in Syria we know from the Egyptian monuments, which give us representations of the Hittites and other populations, and also from the sarcophagus of Ezmanazar, on which the figure of the King has decidedly something Egyptian; this, however, may be due perhaps to the nationality of the artist.

On the Assyrian monuments are also found represented two other foreign populations, and these representations have, as will be seen, a great importance anthropologically.

The first is that of the Arabs. These do not present the type which we are accustomed to associate with the children of the desert, but in this case that which is sometimes designated under the name of Caucasian; the head is long and oval, the forehead high, the nose of moderate size and not aquiline, in fact all the lines are well proportioned. The hair is wavy, and the stature high. The rather wild expression given to the physiognomy may be a deliberate libel on the part of the artist, or due to the fact that these freedom-loving people were prisoners in the hands of the Assyrians (fig. 10).

The other foreign type is that of the Armenians, as represented by two ambassadors who visited Assurbanipal in Elam. These two specimens offer all the characteristics to be noticed in the modern Armenians (fig. 9): long head, long curved nose, fleshy lips, stature short; the general appearance is decidedly Jewish as in the modern Armenians. This Armenian type is so much more remarkable from the fact that at this period the language spoken in Armenia, and illustrated by the inscriptions of Van, is totally different from Armenian, and linguistically connected with Akkadian, Media, and Elamite. As it could hardly be thought that the two ambassadors were of a different type from the mass of the population, or at least from the ruling population, we are forced to admit that the district of Van was then, and no doubt from a much higher antiquity, inhabited by a race exhibiting the same characteristics as the modern population of Armenia. The fixity of the Armenian type has been already noticed by anthropologists.

Besides these two foreign types the Assyrian monuments give the faithful portrait of the Negro; but the black African never was really included in the Babylonian Empire.

The Persian came late on the political scene; it is doubtful if we can point to a single specimen of the so-called Aryan type before Darius. From the time of this King the representations of Persians on the monuments and the seals become numerous. The old Persian type, as illustrated by the monuments of Persepolis and other Persian cities, seems to be what we recognise as the pure Greek type (fig. 15).

I wish in this paper to limit myself to the Assyrian and Babylonian monuments; I leave therefore aside the Egyptian representations, which have besides been so well classified by Mr. Reginald Poole. A few words about the Hittite representations are, however, indispensable.

Judging from the original monuments in the British Museum and the copies, more or less faithful, which I have examined, we have four different types, with a few variations—(1) one very near to that exhibited by the portrait of Marduk-nadin-akhe; (2) a Jewish (generally called Semitic) type; (3) a low type reminding us of the Jews of Lachish; and (4) the variable low type already noticed on the Assyrian monuments.

How are these varieties of types, and their distribution, to be accounted for?

The classics give us very little light. The Greeks had not in science a critical mind. Herodotus, for instance, our chief authority on Babylonian history, reports what he heard without attempting to control it scientifically; and like the rest of the Greeks, he always made a confusion between the Medes and the Persians,<sup>1</sup> but this mattered little, as the human race was for them divided into two classes—Greek and Barbarians; as long as a nation was not Greek it was of little consequence what it was. Diodorus Siculus was a conscientious compiler, but his chief authority on Babylonia, Ctesias, was a Greek who does not appear to have known Assyrian, and was often misled by his translators.<sup>2</sup> Strabo, if he had lived at a period not so late when all traces of the ancient empire of Babylonia were nearly stamped out, might have given us more trustworthy information, but his statements are only the far and faint echoes of the old traditions, and some of them can be understood only by the light of modern discoveries.<sup>3</sup> No doubt on account of the great influence exercised by the Ninevite Empire in Western Asia for centuries, the Greeks gave indistinctly to all the populations before the conquest of Cyrus, the name of Assyrians.<sup>4</sup>

We might expect to find more in Berosus, but as far as can judged from the fragments preserved from the work of this

<sup>1</sup> The Greeks called *Medic* their *Persian* wars. Æschylus in his "Persians" considers Cyaxares as the rightful predecessor of Darius.

<sup>2</sup> This is how is to be explained the fact that Ctesias gave for names to the Medic Kings their Persian translations (Oppert's "La langue et le peuple Medes"). By a similar process, I have found, is to be explained the names of the Assyrian Kings taken by the chronographers from the same author.

<sup>3</sup> So we find that Strabo made a confusion between the *Kaldu*, a tribe of Southern Babylonia, and a class (not a caste) of priests or sorcerers who at a later date took the same name.

<sup>4</sup> "Diod. Sic.," II, 2. The name of Syria is an abbreviation of Assyria. In Diodorus Siculus we have the statement that Semiramis had an inscription written in *Syrian* characters (II, 15).

author, he merely stated that the population was mixed.<sup>1</sup> Justin is the only author who speaks of an early invasion of Scythians,<sup>2</sup> identified by the modern Assyriologists with the Akkadians. I will refer further on to this statement.

If we turn now to the statements contained in the Bible, we obtain no more than from the Greeks. It has been lately shown that the so-called ethnographical list contained in the tenth chapter of Genesis is really a geographical enumeration of the populations known to the Jewish author.<sup>3</sup> Prof Sayce has shown that the primary division symbolised by Sem, Ham, and Japhet is taken from the colour of the skin; and it is evident that, once the distinction made, it was applied to the three great regions: *Ham*, the black, represents the South; *Sem*, the yellow, the Centre; and *Japhet*, the white, the North. By this process many yellow-skinned people are classed among the Hamites or black. The double principle underlying the classification has introduced confusion, and certain names are given as those of the descendants of Sem as well as those of Ham.<sup>4</sup> This classification according to the geographical position is also used by the prophets,<sup>5</sup> and nations having evidently no racial connection are brought together.

The Christian compilers and chronographers worked hard to reconcile the classic and biblical statements. The modern scholars, who treated the question before the discoveries of the Babylonian monuments, made further attempts with the same object. But as it happens sometimes, these attempts at conciliation only gave birth to a fictitious system. The greatest part of it has been exploded by the Assyrian discoveries, like the supposed primitive Aryan population of Babylonia. But some of it remains still, and has become a kind of scientific prejudice. I will allude only to one error, because some authors working on it have advanced the most astounding theories.

The Ethiopians of the Greeks were generally considered as the same as the Kushites of the Bible. *Æthiops* means black, *Kush* means black;<sup>6</sup> it was right so far. But it was not enough

<sup>1</sup> He says that at its origin Babylon was inhabited by a mass of people of various origins. Plutarch in the life of Romulus reports a similar tradition about Rome. In both cases it is evident that this is an acknowledgement of ignorance.

<sup>2</sup> I, 1, and II, 3. It is important to notice that in the eyes of Trogus Pompeius (abbreviated by Justin), the Scythians were not Tatars or Turanians, as generally admitted, but a nation related to, if not the same as, the Gauls.

<sup>3</sup> Lenormant in "Les Origines de l'Histoire," has brought together all what has been said on the question.

<sup>4</sup> For instance *Havilah* and *Sheba* are given twice. The author was no doubt also perplexed when the geographical position placed in the Hamitic group a population evidently connected with the Jews.

<sup>5</sup> Ezekiel xvii.

<sup>6</sup> This meaning might be doubted, but *Kush* is the Egyptian designation for the Negroes.

for the commentators. The Kushites were further identified with the Cossæans and Cassi of the classics,<sup>1</sup> they were made to extend into Asia, and brought as far as the Hindoo-Kush. A brilliant French scholar, the Baron d'Ekstein, made himself the historiographer of this supposed Kushite race, and reconstructed their very imaginary empire.<sup>2</sup> None of his suppositions or assumptions have been confirmed by the modern discoveries.<sup>3</sup> An ingenious author wishing to support this theory on philological grounds has gathered together all the geographical names having sounds more or less connected with *Kush*.<sup>4</sup> In this amusing enumeration is the name of the Hindu-Koosh, which, as we know, means "the death of the Hindoo," another name for "Hindu-Koh," "the mountain of the Hindu," on account of the deadly influence of the climate on the Hindoo traders crossing it; if in the name of this mountain *Koosh* were a proper name, the whole word would have no meaning. The same author wishing to connect these Kushites with some real populations, looks to the Akkadians as their representatives, on the ground of a passage of Pritchard misquoted by M. Maspero;<sup>5</sup> he does not seem, however, to have even understood M. Maspero, for this Egyptologist considers the Kushites as the ancestors of the Semites, and classes the Akkadians under the convenient name of Turanian. The desire to find Ethiopians in Asia has provoked the most surprising aberrations. When M. Dieulafoy sent to Europe the photographs of the representation of Persian soldiers found by him at Susa, the hasty examination of the photograph gave the impression that these soldiers were black skinned,<sup>6</sup> though it was only the dark shadow on the photograph, and it was concluded that we had in this a representation of the famous Asiatic Ethiopians of Herodotus. But the chromolithograph accompanying the report of M. Dieulafoy upset the existence of the black Ethiopians of Asia; the representation is in colour and leaves no doubt as to the skin colour of these soldiers being not darker than that of the modern Persians.<sup>7</sup>

The amusing part of this theory is that these very Ethiopians

<sup>1</sup> In the classics we see already the germs of this confusion, though I am inclined to believe that there are interpolations in the text of Herodotus.

<sup>2</sup> In the "Athenæum Français" and "La Revue Archéologique."

<sup>3</sup> The v. 11-19 of chap. 10 of Genesis, which is taken as evidence of the Kushite empire in Mesopotamia, is very likely a later interpolation.

<sup>4</sup> "Oriental and Babylonian Record," No. 2. He forgot to give the names of several African populations which are certainly more Kush (black) than those he names.

<sup>5</sup> The passage of Pritchard's "Physical History of Mankind," vol. ii, p. 44, refers to the modern Nubian of Upper Egypt. Some authors went so far as to consider the Akkadian a black skinned population.

<sup>6</sup> "The Academy," July 24th, 1886.

<sup>7</sup> "Fouilles de Suse," campagne de 1885-6, Rapport, Paris, 1887.

or Kushites, if we are to believe Brugsch Bey, spoke a language related to neither Hamitic nor Semitic dialects, but a language related to the Nubian, consequently a Negro language.<sup>1</sup>

In conclusion it may be safely stated that the word *Kush* is the Egyptian denomination for the Negroes; that it was used by the writer of the tenth chapter of Genesis to designate populations of the south; that the Ethiopians of the Greeks were Negroes; and that it was extended to populations to the south of Egypt<sup>2</sup> (Abyssinians); but that the Kushites or Ethiopians *never* extended into Asia.

I must apologise for having given so much attention to this point, but lately this Kushite theory has been revived and threatens to invade classical books, and I wish to show that the whole of it is built upon assumptions supported by a few similarities of names, a few misunderstood passages in the classics and in the Bible, and a few distorted facts.

Before trying to explain how these populations came to be distributed, and which was their relationship, we may ask: what is a race?

Many classifications have been proposed to distribute the whole of the human race in groups, but we may say that they are all very unsatisfactory.

The most popular has been of course the philological classification, especially since the discovery of the relationship of the Indo-European languages. When philologists had separated the Aryan and the Semites, they failed to effect a satisfactory grouping of the other languages.

The anatomical classification is not much better, as we find in the same population long and short heads, fair and black hair, short and high stature, &c.

A moral classification has been proposed, but this is variable, as it is rather difficult to ascertain the intellectual capacities of a population.

The geographical appears in many cases the best, as the people group themselves often according to the conveniences of the land,<sup>3</sup> and it is a fact that in most cases the racial divisions answer to the geological constitution of the soil.

The inevitable conclusion is that all these data, insufficient when isolated, ought to be studied together, and all taken into account in order to determine the characteristics of a race.

<sup>1</sup> "Egypt under the Pharaohs," first ed., vol. ii, p. 273, *et seq.*

<sup>2</sup> The name of *Kush* or *Ethiopia* became so much associated with the country at the south of Egypt that it was used to designate *Abyssinia*; that is how the word *Ethiopian* is now used for the Semitic language of *Abyssinia*.

<sup>3</sup> In France after the invasion of the Barbarians the various populations settled themselves according to the natural geographical divisions.

There are no pure races, or rather we ought to acknowledge that a race is the result of crossings and of many influences.<sup>1</sup>

I have not spoken of the traditional or historical evidences. In many cases history enables us to determine the formation, and the development of the race; for instance, the modern nations of Europe have been formed in historical time. We must always proceed, however, from a starting point, and admit the existence of certain races from the crossings of which the new ones were evolved.

In the particular case of the races of the Babylonian Empire, the mythological traditions and historical documents enable us to trace back the development and distribution of the various types found on the monuments.

The first race, which inhabited all Western Asia, was the same short race, found everywhere, not only in Asia, but pretty well all over the world. Its characteristics, which have been noticed when speaking of the populations of Assyria, are more or less modified in various localities: but though this race is easily modified, it can always be recognised by its general features—short stature, round head, low retreating forehead, and prognathism. It is very likely that this is the race which the classics used to call *autochthones*, and which has received from modern writers the names of Turanians, Iberians, Ligurians, &c., all more or less misleading. As it appears to form the lower stratum, so to say, of the human population everywhere, I propose, until a better name is found, to call it the *Ground race*.

The presence of this race everywhere has not been specially noticed, though it is always mentioned in all ethnological papers of any importance. The type is not rare in Ireland,<sup>2</sup> and Barnard Davis, in his "Thesaurus Craniorum," gives characteristics which might be applied to the low race of Babylonia.<sup>3</sup>

It is found also everywhere in Scotland with the same characteristics.<sup>4</sup> In England proper it is rarer, but there are many evidences of its existence in former times.<sup>5</sup> I have noticed it myself in a great many parts of France, and also among Italians of the North or of Sicily. Mr. Hyde Clarke noticed it in Asia

<sup>1</sup> In a nation as in a family the various members show a certain likeness even if they differ anatomically. This general aspect, this *family likeness*, is the result of many influences and especially of moral and intellectual influences. The question of formation of new races in North America has been touched by D. Wilson in "Journ. Anthropol. Inst." vol. vii, p. 338, *et seq.*

<sup>2</sup> J. Beddoe, "The Kelts of Ireland," "Journ. of Anthropol.," No. 2, October, 1870.

<sup>3</sup> *Ibid.*, p. 118.

<sup>4</sup> H. MacLean, "On the Comparative Anthropology of Scotland," "Anthropological Review," vol. iv, p. 218.

<sup>5</sup> D. Wilson, "Physical Characteristics of Ancient and Modern Celt," "Anthropological Review," vol. iii, p. 52, *et seq.*

Minor, but in Asia, as in the north of Europe, it has not been distinguished from the Tatars or the Finns; in fact some writers gave to this race in England the name of Finnic.<sup>1</sup> I have not carried my inquiry into the American populations, but I have no doubt that this race would be found there.<sup>2</sup> Neither is Africa any exception; the Puls are everywhere accompanied by a low class of Negroes; and what has been called Helotts, tribes composed of people of a lower anthropological type, are not uncommon in Africa.

A few weeks ago when Prof. Flower read his paper on the Akkas, I was struck by the sketch of an Akka exhibited; it offers the principal characteristics of my ground race.

An important point to notice is that this race is everywhere found in an inferior social position, and it was equally so in the remotest age<sup>3</sup>; nowhere did it rise to the rank of a dominating or ruling race, but everywhere it accepted the yoke of the conquering tribe invading its land. It is the race of the land, and accepts every new master with a passive obedience. This explains why this race has no language of its own, for it accepts willingly that of its masters.

If I were inclined to theorise, I might suggest that this ground race is that of a previous geological period anterior to the age of the nobler races. But this would be nothing new, for it has already been advocated, and I leave it to others to decide.<sup>4</sup> The only fact which interests me is the existence all over Western Asia of a low primitive race easily recognised by its physical and intellectual characteristics; this is the ground race.<sup>5</sup>

The second race, which came to disturb the primitive inhabitants of Syria and Mesopotamia, was that commonly called Semitic from the language it spoke. I had myself adopted this name, but I must now reject it because this race had not the characteristics we are accustomed to attribute to the so-called

<sup>1</sup> See the paper of D. Wilson, "American Illustrations of the Evolution of New Varieties of Man," "Journ. Anthropol. Inst.," vol viii, p. 341.

<sup>2</sup> *Ibid.*, p. 60.

<sup>3</sup> Some biblical exegetes declare that the double creation of man in the first and second chapters of Genesis refers to the creation of two races distinct.

<sup>4</sup> M. Maspero ("Hist. Anc.," p. 131) seems to admit the existence of a population before the arrival in Mesopotamia of what he calls the noble races. But he falls into the same errors as most modern Assyriologists in placing the Akkadians before the Semites, though from the very evidences of the facts it is the contrary which happened. If the Akkadian invasion is to be identified with the Scythian one, the Semites certainly existed previously, for they were made tributary for 1,500 years according to Justin (II, 3). See my "Pre-Akkadian Semites" and "Origin and Development of the Cuneiform Syllabary" in the "Journ. of the R.A.S."

<sup>5</sup> *Ibid.*, p. 80, and all through the paper.

Semitic populations, taking for type the Jews. This race, as I have shown in a previous paper,<sup>1</sup> was originally from Africa, and acquired its special characteristics in Arabia Petra, where it seems to have made a long stay. For this reason I propose to call it *Sinaic*, from the name of the mountain *Sinai*, as the Caucasian is called from the Caucasus. This name is of course provisional. The Semitic tongue was certainly its language, but its physique must be looked for not among the Jews, Babylonians, Assyrians, and Syrians, but among the ancient Arabs as illustrated by the Assyrian monuments of which I have already spoken (fig. 10).

It has been noticed that by their peculiar geographical position the Arabs have preserved themselves comparatively purer than any other Semitic tribe,<sup>2</sup> and this appears to be true for the physique as well as for the language. From private enquiries of Arabs I find that the ancient type, just referred to, is the prevalent one in Arabia. This type, therefore, I take as that of my Sinaic race.

The third race which came to contribute to the stock of population of Babylonia, is that of the primitive Akkadians, and which I call provisionally *Gurian*. It is probable that the invasion of this people covered all Western Asia, that is, Babylonia, Assyria, and Syria<sup>3</sup>; at least, as we shall see, we detect its influence in all these countries. This race, after having affected the types of the other populations, and having contributed to form new races, appears to have melted away, and at later times is nowhere found pure.

A fourth race which contributed to the formation of new types is that represented by the two Armenian ambassadors, and which I propose to call *Nairic* from the name of Nairi, which designates in the Assyrian inscriptions the mountains of Armenia. As already noticed, the type appears at the time of Assurbanipal, when the Vannic language was still spoken. It is therefore probable that this Nairic race existed there in more ancient times, and it appears to have resisted all influences.<sup>4</sup>

<sup>1</sup> "Journ. Anthropol. Inst.," "Origin and Primitive Home of the Semites." Since this paper appeared the proofs in favour of my theory have increased tenfold; I have been able to connect the Semitic languages with those of Abyssinia (Agau, Falacha, &c. See "Notes on Assyrian and Akkadian Pronouns," "Journ. of the R.A.S.," vol. xvii, part 1). The Agaüs of Lasta offer also the same type as the Arabs of the Assyrian monuments, regular and well proportioned features, &c.

<sup>2</sup> See "Origin and Primitive Home of the Semites." Sayce, "Assyrian Grammar for Comparative Purposes." Palgrave, "Travels in Arabia."

<sup>3</sup> And perhaps also Asia Minor. The origin and primitive home of the Akkadians is unknown. Some suppose they came from Central Asia through Media (Sayce, *ibid.*, p. 13), others through Asia Minor (Pinches' "Guide," p. 4).

<sup>4</sup> The Armenian type seems to have a strong power of resistance, and maintained

These four races by their various crossings, which are in many cases attested by history, explain the existence of the various types exhibited on the monuments, and the formation of what I call new races.

The long-headed Babylonians are evidently the result of a crossing of the Gurian and the Sinaic.

In the type of Marduk-nadin-akhe we have a crossing of the Sinaic and the ground race.

In Assyria the Ninevite type appears to be the result of the crossing of the Gurian and Sinaic with a dash of Nairic. It may be that we have simply a modification of the Babylonian type (Gurian + Sinaic) through Nairic influence. It is from this influence<sup>1</sup> that the Ninevites have acquired their so-called Semitic nose. The influence of the Nairic tribes may have been exercised through early conquest or merely through contact and intercourse.

The low race of Assyria is the result of the crossing of the Assyrian with the ground race. And it is to be noticed that the curved nose of the Assyrian is visible in some specimens.

In Elam the mass of the population seems to have belonged to the ground race. It was subdued at an early period by the Gurians or Akkadians, who introduced their language, a dialect of which became the tongue of Susa, and brought in the variations which we notice in the type.

At a later date the Babylonian conquests and alliance brought in some modifications, especially in the higher classes; but it may be said that in Elam the ground race type predominates.

In Syria the mixture of races was, if anything, greater than in Babylonia. I will speak first of the Jews.

The very history of the people, as given by their sacred books, shows beyond any doubt, that they are not a pure race. The belief in the purity of the Jewish race is one of these prejudices which are repeated without trouble being taken to examine their accuracy. The Jews left Babylonia, under the leadership of Abraham, to escape persecution.<sup>2</sup> They went northwards and made a long stay near the mountains of Armenia; that is how they acquired the special characteristics, noticeable especially in the form of nose and chin of some of them,

itself through all accidents and influences (see "The Armenians of Southern India," by J. Shortt, "Journ. of Anthropology," 1870, p. 180).

<sup>1</sup> The partly Armenian look of the Assyrian was detected by R. Knox in his paper on the Assyrian marbles. "Transactions of the Eth. Soc.," vol. i, p. 146, *et seq.*

<sup>2</sup> It would require too much space to prove the point now, but the fact of such persecution is evident.

through Nairic influence.<sup>1</sup> Many travellers and anthropologists have noticed the likeness of Armenians to Jews: their moral characters are also very similar.<sup>2</sup> I do not speak of their common traditions, because these may be due to more modern intercourse. Once in Palestine, these Jews absorbed part of the native population. From Egypt they carried with them perhaps some Negrotic tribes, and thus was formed the type shown by the Jews of Lachish.<sup>3</sup> The Jews, however, always preserved two types, the one acquired by Nairic influence, and the other due to mixture with the ground race and other tribes of Palestine and Negroes from Egypt. The first type may be considered as forming the aristocracy; it is from this that would descend the Portuguese Jews, while the German Jews would come from the other.<sup>4</sup>

The Phœnicians, as far as can be judged, were a race different from the Jews. They also offered two types, the first one the result of a crossing of the Sinaic with the ground race, and the other the ground race modified by various influences—Negroes from Egypt, Gurians, &c.

The Hittites, judging from their own monuments, give a similar variety; the type reminding us of Marduk-nadin-akhe is the result no doubt of a crossing of the Sinaic and the ground race; the big-nosed race with developed prognathism, a mixture of Gurian with the same ground race.<sup>5</sup> The Nairic influence is also noticeable in some cases. But the Gurian element is larger, it would appear, than in Assyria or among the Jews. The Jews in fact have very little Gurian blood.

The Persians have a special type, and as they came late on the political scene they have had little, if any, influence on the population of Babylonia. Possibly before the conquest of

<sup>1</sup> An Arab Jew (judging from his type no doubt, from pure Arab descent, but converted to Judaism) exclaimed one day to me: "Where have the European Jews got their noses from!" The answer is simple; from Armenia.

<sup>2</sup> In many countries of the East the Armenians hold the same position and take to the same callings, as the Jews in Europe. See J. Shortt, *op. cit.*, p. 184, "with a general Jewish cast about their features," he says, speaking of the Armenians.

<sup>3</sup> Some travellers declare having found in Palestine a Jewish Negrotic tribe, which would have perpetuated itself through all the various dominations ("Trans. of the Eth. Soc.," vol. i, p. 223).

<sup>4</sup> If some people still believe in the purity of the Jewish race I would refer them to the paper of J. Beddoe in the "Trans. of the Eth. Soc.," vol. i, p. 222, *et seq.*

<sup>5</sup> This is the most common type. The Hittite types, *i.e.*, the types on the so-called Hittite monuments, have not been classed by anyone the ethnologist from point of view. They vary very much according to the localities where they are found. It is to be regretted that in many cases the copies of the inscriptions cannot be regarded as accurate types. All the inscriptions have been collected together in the work of Rev. W. Wright, "The Empire of the Hittites."

Cyrus some Persians had penetrated into Elam and given birth to hybrid specimens, but this is still doubtful. The Persian type, judging from the Persian monuments, remained very pure till the fall of the Empire.

There are two monuments of which I have said nothing, though they would be most important from an anthropological point of view, if we could have trustworthy copies of them. I mean the Buhustun inscription of Darius and the tomb of the same King at Naksh-i-Rustam. In the first, the portraits of the captive Kings brought before Darius must give some idea of the types of the countries. In the copies published we can only notice the special dress of each figure,<sup>1</sup> but the type is too much European to be trusted, and the variations in the drawings prove their inaccuracy.<sup>2</sup> The other monument would be more important still, for it gives, as is stated in the inscription, the representation of all the populations submitted to Darius, but in this case the copies cannot be trusted. In the drawing of Flandrin<sup>3</sup> we can detect the representation of the Negro, but for the other figures the type cannot be detected with certainty. I have been therefore obliged to neglect these two important documents.

Mr. R. Poole terminated his paper by expressing the wish that something might be done to secure to science accurate copies of the types on the Egyptian monuments. Thanks to the support of the Institute, his wish has been fulfilled. I will venture to express a similar wish with respect to the monuments I have just mentioned. Could not something be done to obtain accurate copies or casts of these representations?

### *Description of Plate VI.*

#### *Profiles from the Assyrian and Babylonian Monuments.*

- Fig. 1. Head of an early king or patesi, from a bronze head found at Tello by M. de Sarzec, and now in the Louvre.
- Fig. 2. Head of a man of the lower class, of same period as fig. 1, from a rough outline drawing in intaglio on stone, from a fragment found at Tello by M. de Sarzec, and now in the Louvre.
- Fig. 3. Portrait of Hammurabi, King of Babylon (about 2000 B.C.), from a stele now in the British Museum.

<sup>1</sup> The costume of the Sakian leave no doubt as to his nationality.

<sup>2</sup> It is sufficient to compare the copy given in the "Journal of the R.A.S." with that of Flandrin to be convinced that none are accurate.

<sup>3</sup> It would appear that the French artist had in view only the artistic side of the monuments, and the types of the figures cannot be trusted. All the monuments of the Persian kings have been photographed by the German mission, but so badly that the figures of the tomb of Darius cannot be even guessed.

- Fig. 4. Portrait of Marduk-nadin-akhe, King of Babylon (about 1100 B.C.), from a boundary stone now in the British Museum.
- Fig. 5. Head of a Babylonian soldier fighting in the ranks of the Ninevite army (about 650 B.C.), from a bas-relief in the British Museum.
- Fig. 6. Head of an Assyrian king, from a bas-relief in the British Museum.
- Fig. 7. Head of one of the Assyrian king's attendants, from a bas-relief in the British Museum.
- Fig. 8. Head of an Assyrian of the lower class, time of Sennacherib, from a bas-relief in the British Museum.
- Fig. 9. Head of one of the Armenian ambassadors visiting Assurbanipal during his campaign against Elam, from a bas-relief in the British Museum.
- Fig. 10. Head of an Arab prisoner, time of Assurbanipal, from a bas-relief in the British Museum.
- Fig. 11. Portrait of Te-umman, King of Elam, killed by Assurbanipal, from a bas-relief in the British Museum.
- Figs. 12 and 13. Heads of Elamite soldiers fighting against Assurbanipal, from a bas-relief in the British Museum.
- Fig. 14. Head of one of the Jews taken prisoner at Lachish by Sennacherib, from a bas-relief in the British Museum.
- Fig. 15. Head of a Persian soldier, from the representation on enamelled tiles found by M. Dieulafoy at Susa, and now in the Louvre.

### DISCUSSION.

Mr. PINCHES said that though one of the purposes for which he had attended the meeting was to hear Mr. Bertin's most interesting paper, yet he must admit that he could throw but little additional light upon the subject of the races of the Assyrian monuments. He had, it was true, paid attention to the question of the races delineated on the bas-reliefs, but he had no theory of his own to advance concerning them. Mr. Bertin had spoken in his lecture of the types of the Jews exhibited on the monuments, one—that of the tribute-bearers of Jehu—being a pure Semitic type, and the other—that of the captives of Lachish—being apparently much lower in the scale of intelligence. Now it was to be noted that examples of these types were to be met with at the present day, even that low type of the captives of Lachish, though naturally this was very rare. The tribute-bearers of Jehu, with their bent forms and their tribute (carried, in the case of some, in bags over their shoulders) reminded one of the now rather rare Jewish old clothes men, whom we used to see about the streets of London. It was true that the tribute-bearers were dressed differently, and wore boots with turned-up toes, but the type was practically the same. It was to

be noted, however, that the *Arabie Jews*, according to a gentleman of that race, from Bagdad, whom he knew, were of a different type from those of Europe generally, and did not show to a so marked degree the hooked nose which was their most prominent and distinctive feature. The Jew from Bagdad, to whom he referred, had a rather narrow face, a narrow but high forehead, and a nose which, though long, was only slightly hooked. Another very interesting type which Mr. Pinches had come across was that exhibited by the murderer Marks, a picture-frame maker with whom he had had dealings. Marks was a short man, rather swarthy, with high cheek-bones, broad nose, and curly hair. With but the very slightest modification—a mere rounding-off of the features—this was the very type of the captives of Lachish on the Assyrian bas-reliefs—Mr. Bertin's "low type."

The Assyrians, as represented by themselves, were certainly of a different type from the other Semitic races. They seem to have been of ordinary height, thick-set and muscular. The face was, as a rule, round and full. The eyes were large and overshadowed by beetling brows, well arched. The hair, both of the head, brows, and beard, was jet black. The nose, however, was, perhaps, one of the most interesting portions of their physiognomy, for it seems not to have been of the same shape as that of any other of the Semitic races, but to have had a longer depression between the eyes, and a more graceful rounding off at the tip. Judging from observations which he had made, Mr. Pinches thought that this feature of the Assyrians was the result of the intermingling of two races, one having a curved and the other a comparatively straight nose, in neither case, however, very long. It was such as might be expected from the union of, say, an Aryan and a Semitic race. In conclusion, Mr. Pinches said that he was of opinion that there was nothing so good as actual observation of the races and types now on the spot, and he recommended the subject to anyone who might have an opportunity of travelling in the East. He himself, staying constantly in England, could do but little in the way of comparison with the living representatives of those ancient races, but what little he had observed had been most interesting, and would not, he hoped, be without its value. In answer to a question by the President, Mr. Pinches said that he had not noticed, in the Armenians he had met with, that the upper lip was particularly short, but his attention had not been called so much to that feature as to the general type, which, in one case, coincided exactly with that shown on the bas-reliefs of the time of Assurbanipal, or Assurbanipal, king of Assyria, 667-626 B.C.

Mr. A. L. LEWIS referring to Mr. Bertin's statement that the figure of the King was usually more carefully executed than other figures, asked whether he thought the representation of kings were intended as portraits? This appears to be the case with many of the Egyptian sculptures and paintings (as shown by Mr. Petrie's photographs, &c.), but so far as he had himself observed there was

not much individuality about the Assyrian sculptures. Mr. Lewis also asked whether Mr. Bertin had compared the Assyrian representations with the Egyptian representations of the Khita, Arab, Syrian, and other tribes, against whom both nations had warred, and, if so, how far he had found them to correspond?

The AUTHOR in reply, said that the observations of Mr. Pinches tended, to a great extent, to confirm his explanation of the formation and development of the Babylonian, Assyrian, and Jewish, or so-called Semitic, races. The Armenian, or Nairic type, is most persistent; the Armenians themselves appear to be a non-Aryan population, who have adopted an Aryan language; their contribution to the Assyrian or Ninevite type is evident, but it is absent in the Babylonian. The Aryan race did not appear in Mesopotamia before Cyrus; therefore it cannot have had any influence on the formation of these types; what Mr. Pinches attributes to Aryan influence is due to that race, which is called in the paper Sinaic, and which must have been the Semitic-speaking population before the Akkadian invasion.

In answer to Mr. Lewis, the author stated that a careful examination of the Assyrian sculptures shows that the representations are, as in Egypt, undoubtedly portraits; if this does not appear at first sight it is on account of the strong family likeness of all the Ninevites. Mr. Bertin added that, in order not to unduly extend his paper, he had confined himself to the Assyrian and Babylonian monuments; he did so, especially as the question of the Egyptian representations had been already discussed by a competent Egyptologist.

MARCH 27TH, 1886.

FRANCIS GALTON, Esq., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From the AUTHOR.—The Tahiti Archipelago. By Baron Anatole von Hügel.

— The Tuamotu Archipelago. By Baron Anatole von Hügel.

— Sur la façon d'étudier une série de crânes d'après M. Topinard. Par M. le Dr. Victor Jaques.

— Antropologia Fisica della Fuegia. Pel Prof. Giuseppe Sergi.

From the AUTHOR.—*Evoluzione Umana.* Pel Prof. G. Sergi.

From the SOCIETY.—*Proceedings of the Royal Society.* No. 263.

— *Journal of the Society of Arts.* Nos. 1843, 1844.

— *Journal of the China Branch of the Royal Asiatic Society.* 1887. Nos. 1 and 2.

— *Bulletin de la Société de Borda, Dax.* 1888. Premier Trimestre.

— *Mittheilungen der Niederlausitzer Gesellschaft für Anthropologie und Urgeschichte.* 4 Heft.

— *Mittheilungen der Kais. Königl. Geographischen Gesellschaft in Wien.* 1887.

From the EDITOR.—*Nature.* No. 960.

— *Science.* Nos. 265, 266.

— *Photographic Times.* 337, 338.

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Dr. E. B. TYLOR read extracts from a paper "On the Akkas," by Sir Richard Burton, K.C.M.G. The communication was illustrated by several photographs, including those of the Akka boys brought to Europe by Miani. Dr. Tylor, in commenting upon the paper, said that in the spring of 1881, four years after Sir Richard Burton's visit, he passed through Verona and called on Count Miniscalchi, in whose household the two "Miani" Akkas were living, evidently happily. They scarcely seemed to have grown, and the photograph (sent by Sir R. Burton) continued to give a good idea of their appearance. Dr. Tylor confirmed the description of their complexion as deep brown, negroid, quite unlike that of the Bushmen, with whom no one who had seen them could confound them. He brought away specimens of their hair, spirals of negro type.

M. HENRI SIRET, of Brussels, exhibited a number of illustrations of prehistoric antiquities found by himself and his brother, M. Louis Siret, during their explorations in the south-east of Spain.

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### *The EARLY AGE of METAL in the SOUTH-EAST of SPAIN.*

By MM. HENRI and LOUIS SIRET.

[WITH PLATE VII.]

SPAIN offers a great field for investigations in prehistoric archæology; and the scarcity of researches made in this country is the more to be deplored, inasmuch as we look to Spain, on account of her geographical position and of the natural riches of her soil, for the solution of many prehistoric mysteries as yet

unravell'd. We cannot fail to perceive the part which this great country must eventually play in the solution of these questions, nor to lament that she should be so much behind other countries in the great scientific movement which has in recent years thrown so much light on primitive civilisation.

It fell to our lot to make a sojourn of eight years in the south-east of Spain. Our profession as engineers enabled us to traverse in all directions a large extent of the provinces of Murcia and Almeria. We took advantage of this circumstance to search for the remains of those who had inhabited the country before the historic period.

The success which rewarded our labours was beyond all expectation. We explored a strip of coast 75 kilomètres long, between Cartagena and Almeria, penetrating occasionally into the interior to a distance of 35 kilomètres from the shores of the Mediterranean.

In this district we explored about thirty stations. The discoveries we made show three perfectly distinct epochs. The first belongs to the *Neolithic* age. The second to a period of transition in which stone materials are in a great majority, although mixed with bronze ornaments and instruments of pure copper, while the third showed a civilisation of the most advanced type, characterised by special customs and new developments, stone being no longer employed except for restricted uses; copper being used more than bronze in manufacture of weapons and tools; the use of iron, however, was unknown, neither were there any coins or inscriptions. We will point out the most noticeable features of each of these epochs. The first offered us fifteen stations, situated on elevated plains.

The objects met with are found either on the surface of the soil, displaced in tilling, or at a slight depth in the bed of vegetable soil, mingled with carbonised remains.

One station, however, yielded us several centres of habitations marked by blackish soil filling a roughly polygonal space dug into the ground to a depth of about 40 centimètres, and sometimes surrounded by stones forming a rude wall. In this ground there lay various objects used by the ancient inhabitants and remains of their food.

In industrial products we must distinguish three classes—those of stone, those of bone and shell, and those of pottery. The stone objects are flint materials, polished axes generally of diorite, broken rings of marble, and perforated discs of stone and mill-stones for pounding the grains.

The worked flints are remarkably small in some of the stations: they are apparently flakes produced in the manufacture, but the intentional forms of the prehistoric tools, produced by

careful chipping, are easily observed in them. We see knives or flakes, both chipped and polished, nuclei, scrapers, piercers, and arrow-heads. These last are small flints of a more or less trapezoidal shape cut from the flakes. The flint is, probably, found in the country itself. The small tools have as yet been little studied; M. Cartailhac has found them in the Portuguese kjoekken-moedding; some have also been found in the dolmen of St. Laurence (Lower Alps), in the Abruzzi, and quite recently in Belgium. The polished axes are almost always of diorite, this stone abounding in the country. We possess certain series classified according to the state of workmanship; they are of all dimensions, from 4 to 30 centimètres in length.

The stone rings, of which fragments have been found, have been produced by rubbing; they were ornaments, bracelets, or pendants. The bone instruments consist of only a few pins.

The taste for personal ornaments was already highly developed among these peoples, as shown by numerous beads of steatite and shell, and by the scallops worn or perforated in order to make bracelets or pendants. The steatite beads are cylindrical in shape, or like a truncated olive, the perforation being effected from one side only, or from both.

Those made of shells have been obtained by dividing the valves of the mollusc with flint blades, and then making them flat by rubbing, and rounding off the edges, and lastly, boring the hole with flint awls.

An interesting discovery has enabled us to give an exact account of the process; we found in a little cave an urn of baked clay, elegant in form, though made in a primitive fashion; on its surface it bears ornamentation consisting of dots and lines; it is furnished with three flattened handles; in the earth which filled it, we found some entire sea-shells, fragments detached from other shells testifying to a commencement of work; small flakes of flattened shell, worn by rubbing, and more or less rounded; others already perforated; lastly, some beads completely finished and ready for stringing; there were in all about 500 beads, some finished and the rest unfinished. Next to this gradual series of ornaments in different stages of finish, we found flint nuclei, flakes that had served to divide the shells, and piercers for drilling the holes. The uninterrupted succession of the different stages, from the raw material to the finished bead; the implement and the flint block from which it had been extracted—all were represented here. The same vase also contained a beautiful hatchet made of white stone.

In order to make pendants, whole scallops perforated near the hinge were used, or pieces of the edge of this shell; we possess

more than thirty of these fragments shaped like crescents perforated at each end for suspension; about twenty entire bracelets obtained by rubbing away the centre of large scallop shells, and a large number of fragments of ornaments of the same class. Up to the present these ornaments have been very rare in collections. We possess, also, a very singular object of this period, made of carved slate; it is in the form of a cross.

We will not enter into details about the pottery; but will only say that we discovered a great inequality in the nature of the paste as well as in the care taken in making and firing the vases; we possess a specimen representing the art of pottery in its most primitive state; others, also rough, though better made; lastly, some pieces showing a finish altogether remarkable for those early periods.

The bead-makers' urn does not appear to be a product of native industry; it is too well made, and of an exceptional form which we have not found in the succeeding periods.

Stations of this period have also supplied us with some pieces of pottery ornamented with dots and lines and some few dots; fragments of copper implements; these last objects belong, probably, to the metallic age. It is inferred that the same sites must have been inhabited for a long time, and various civilizations may have followed one another; but those in which no traces of metal have been met with are regarded by us as indicating an earlier period than those which contain metal.

The mode of burial used at this period was by inhumation of several bodies in polygonal spaces enclosed by stones set in an upright position; the bodies were interred at a slight depth, with knives, arrow-heads of flint, and ornaments formed of steatite, beads, shells, or fragments of scallops; these ornaments have already been described.

We found seven of these graves; the number of skeletons varied from two to twelve or fifteen for each tomb; the bones were almost wholly destroyed; we possess, nevertheless, a skull, all the upper part of which is in good preservation.

Let us pass now to the description of stations of the transition age. We explored seven of them. Their topographical situation is like that of the preceding, from which they are distinguished by the following features:—

1. The construction of actual dwellings bounded by walls of stones cemented with earth, in which wood, reeds, and boughs played a great part.

2. The presence of ornaments of bronze and beads of hard stone.

3. Native metallurgy, smelting copper ore of the country in order to form tools in imitation of those of stone.

4. Co-existence of incineration with inhumation.

Thus, the man of that period constructed for himself a more secure and durable shelter; he protected it from the inclemency of the weather, from the wild beasts, and from his fellow-men, by actual walls which he raised with pebbles found in the torrents, and on mountain slopes; he bound these materials with earth; he covered his house with a roof formed of branches tied together with esparto, and overlaid with clay; and supported the roof with upright wooden props. We have been able to study these constructions even in their minutest details, thanks especially to the conflagration which destroyed them; the fire has charred the posts and esparto cords, has calcined the mud in which we see the perfectly distinct marks of branches and reeds, and has sometimes vitrified the soil of the dwellings in which we discover beds of rubbish. Our investigations brought to light numerous objects of daily use.

We give a brief list of the principal discoveries.

One hundred and fifty arrow-heads of flint, in which we find the greater part of the known neolithic types; several specimens are very well finished.

Two hundred flint flakes. These present nothing remarkable: several are chipped at the edges.

Forty axes of diorite, polished.

Many grindstones of various kinds of stone, used to pound the grain.

About one hundred pins of worked bone, two of which are furnished with eyes; five bone tubes intended to serve as bodkin-cases.

About ten horns of baked earth with a hole drilled at their extremity; clay-lumps slightly baked, oval in shape, pierced with holes in which one perceives the wear produced by the passage of a cord.

Numerous fragments of pottery, with handles and ears, perforated and not perforated, some whole vases showing a certain advance on the preceding age, although the wheel was not yet employed.

Fragments of pottery encrusted with copper scorïæ.

Cereals, of which the form is preserved by carbonisation.

Bones of animals, among which those of the goat predominate; the stag and the boar are also found.

Fifteen copper objects, formed of small pointed bars; one of these tools is still thrust into a bone tube which served as its sheath.

Three flat axes of copper (Pl. VII, figs. 6 and 7); one of

them presents an edge slightly widened by hammering, and constitutes the transitional form between the two others, reproducing in a slightly modified form the stone axes, and also the type of the flat celts, which we shall find in our third period.

This graduated series has seemed to us very important.

Two triangular arrow heads of copper, without tang or barbs.

A knife blade, likewise of copper, flat, without rivets or holes for them, which makes us think that it was simply thrust into a wooden sheath, or even held in the hand.

About ten kilos of copper scoriæ, and about an equal quantity of copper ore.

This ore was found in a heap, in the interior of a village; it was obtained from a copper bearing lode, situated a quarter of a league from the station; it is a very ferruginous carbonate.

Some little ingots of melted copper, irregular in shape.

Seven interments of this age have been examined, and both cremation and inhumation were employed. The ashes were deposited in urns of baked clay, having a flatter vessel for a lid; the urns themselves were placed in sepulchral chambers formed of slabs. The bodies that were simply interred had been placed by the side of the urns in the same graves. Near these remains we have again found oval bracelets of bronze, beads of bronze, limestone, and cornelian.

The changes which appear at this period must be attributed to a foreign influence; we believe that a trading people will be found to have brought to the neolithic men of the south-east of Spain the bronze ornaments, as well as the rite of cremation, and at the same time taught them the method of utilising the copper ores of the country. The metallurgic attempts which we discover would, therefore, be the first essays of the natives to cast copper instruments for themselves, in imitation of those of stone; which, however, are still in a greater proportion.

The art of reducing copper ores would not then be a discovery due to this civilisation, and with the first copper the first bronze appears.

The third epoch, which we have called the metal age, presents the following characteristics:—

1. Construction of villages on steep rocks, protected naturally by their situation, and artificially strengthened in weak places by thick walls, made of stones cemented with earth.

2. Discovery of the native silver of the Herrerias. This locality is situated in the centre of the zone where we found the most beautiful stations of this period, and where, a few years ago, silver was worked at a slight depth.

3. The use of the precious metal for manufacturing objects of ornament, and even weapons and tools.

4. General employment of bronze and copper, the latter being much more abundant than the alloy: the use of flint is now confined to saws, for which it is better suited than metal.

5. Disappearance of cremation. Interment effected in the floor of dwellings, a custom to which people resort on account of their great respect for the deceased and dread of an enemy; people wished to shelter the graves in which precious objects were deposited from the profanations of an invader, and the site of the villages was too small to make a cemetery apart.

We have discovered fifteen stations which we attribute to this period, and have made very important and successful excavations in ten of them. We have been able in this manner to collect very numerous data in regard to the construction and defence of these villages, and the funeral furniture of the graves excavated gave an enormous series of objects.

We met in the excavations two classes of objects: some come from the rubbish of the dwellings which have been often destroyed by fire; others were deposited in the graves. We give a list of the former, which we will describe very briefly.

Seven hundred saws of flint; they are coarse flakes, generally made of coarse-grained flint, which is very suitable for sawing; these tools are often very much jagged at the edges, which are generally glossy with wear. Some were held in the hand, others sheathed, for traces of a bituminous matter used for fixing the saw are still clearly visible.

Two hundred whetstones. We thus designate certain rectangular objects of schist, usually perforated at each extremity; their length varies from 5 to 20 centimètres. A good many of them show the characteristic wear of their use.

Forty polished axes of diorite; they are probably neolithic implements, collected and made use of by these tribes.

Several hundred mill-stones for pounding grain; we found several pairs of stones arranged exactly as they must have been employed.

About three hundred stones of various kinds, such as hammers, pestles, polishers.

A large quantity of carbonised leaves, barley-corns and wheat and various fruits.

Nine hundred tools of bone and ivory; the greater part are tapered pins, having served as bodkins or awls; there are also needles furnished with an eye, and instruments of unknown use.

A very large number of sea-shells, some of them pierced; limpets, *Cardium*, &c.

Several hundredweight of baked earth: we have given this name to lumps of clay, generally not much baked, rectangular or round, and 10 to 15 centimètres in diameter; they are drilled with one to four holes, which are worn away, almost always on one side only.

In our opinion they must probably have served for stretching threads in weaving occupations: we have pointed them out already in the preceding period.

Six moulds of sandstone for casting flat axes, knives, and bars, of which chisels, awls, &c., were made.

About twelve crucibles of baked earth, having the form of flat cups, very thick. Copper scorix and molten metal adhere to it. An analysis of one of these crusts proved that it was bronze. Some of the crucibles and moulds were collected into a sort of dark corner, covered with a rough arch of stones and earth.

Fifty arrow-heads of copper, the form of which varies from a simple flat lozenge-shaped plate to an arrow-head, tanged and barbed, about two hundred small round or square bars and some chisels of copper and bronze.

Knives and axes, of which we will speak again; these objects being more frequent in the burial-vaults.

Lastly, some fragments of pottery bearing ornaments of dots and lines incised; and innumerable pieces of wares of all kinds.

We will now say a few words about the burial-vaults. We excavated over 1,300 of them. The bodies were buried in the earth or in a naturally hilly spot, and were protected more or less by stones; or they were introduced into a cist formed of six slabs of freestone or pudding-stone; or more frequently they were interred in a large urn of baked earth.

To 1,300 burial-vaults there were 150 holes, 150 cists, and 1,000 urns. The body was generally contracted so that the knees were drawn up to the chin; thus it is very exceptional that the tombs are more than one mètre long. They were arranged in this way in order to save ground.

It is likewise for practical reasons that urns were more employed than cists. When once the potter's art had obtained the development that we have discovered at this period, it may be believed that urns of baked earth were preferred to the cists made of slabs; as being easier to make on the spot, easier to close, and taking less room.

The form of the large urns is uniformly the same, and resembles that of an egg with the large end cut off and replaced by a funnel-shaped mouth more or less pronounced (Pl. VII, fig. 3).

Those containing skeletons of children are probably domestic vessels which have been adopted for sepulchral use. They are

of various shapes. The smallest are not more than 20 centimètres high. The particulars we have gathered concerning these urns show clearly that they have been made without the help of the potter's wheel. The paste is generally more or less of a dark red colour and very well baked. Many small fragments of stone are noticed in it, introduced designedly in order to prevent shrinking.

The largest of these tombs are 1·05 mètres long, 60 centimètres in diameter in the centre, and 50 centimètres at the mouth. They are almost always placed horizontally, a slab of sandstone, schist, or gypsum being put at the mouth to close them. In certain cases this closing has been effected by means of another urn attached to the first mouth to mouth, or by means of a smaller vase.

The burial-places were almost always filled with earth, the urns had become broken, and the pieces were sunk down in the earth.

In some cases, however, the tomb was entire; the urn, although broken, preserved its form, the pieces having remained in their place. The lid had been hermetically sealed, and by removing it we were enabled to see the burial-place just as the ancients had arranged it.

The funeral furniture consists of tools, castings, ornaments, and bones of animals. We will say a word about each of these series of objects.

The arms and the tools are more often of copper than of bronze, although those of bronze have the same shape as those of copper. Beside the men they placed a flat axe, a halberd or a sword, and a knife or dagger; beside the women a knife and a bodkin. The flat axes have a rather wide blade, the sides are curved. We found about seventy, the specimens showing only a small rim obtained by hammering the side. The three hundred specimens of knives or poignards are flat blades furnished with rivets for fixing to the handle (Pl. VII, fig. 5). Their length varies from 4 to 22 centimètres. There are often some woody filaments, or fibres, of the latter preserved by means of incrustation with copper salts. The same impregnation has preserved pieces of linen-cloth which we have often found adhering to the weapons. The fibres which remain of the handle are parallel to the length of the blades or slightly oblique. The rivets are generally of the same metal as the blade. Their number varies from 1 to 10. We possess eight knives with silver rivets.

We have called by the name *halberd* a weapon of a particular kind. Its length is the same as that of the poignards, but the base is wider; the rivets are stronger; they have, besides, a strong central rib, and when fibres of the handle are preserved

they are perpendicular to the length of the weapon, which shows a method of sheathing quite distinct from that of the knives (Pl. VII, fig. 4).

We possess about a dozen of them. The swords are blades 55 to 65 centimètres in length, of the same shape as the knives; they are of bronze. Of these we found three.

The borers are small bars, rounded and pointed at the extremity, square and flat at the other end, on which fragments of woody fibre are sometimes found. We have several borers of which the wooden or bone handle is still well preserved. The graves have yielded two hundred borers.

Generally speaking, the metal objects are greatly changed. The knives and ornaments no longer possess any metal; all have been changed into an oxide or a carbonate. The axes have resisted better, owing to their thickness.

We shall say but a word or two on the pottery, so abundant and so beautiful, found in the sepultures. They are of several distinct types. The paste is generally black, and through it are scattered silvery fragments of mica. It bears the traces of frequent and careful polishing. The pottery is executed with a very remarkable perfection, although without the aid of the potter's wheel. The forms are simple, yet elegant. We may especially cite the cups with feet or pedestals (Pl. VII, fig. 1). This form is new in the first bronze age. We possess very beautiful and numerous specimens. These cups are often broken. We have often met in the same tomb a larger and a smaller vase. Altogether we have collected over 1,000 entire pieces of pottery in the sepultures of this period.

The ornaments are of various kinds: rings, bracelets, earrings, necklaces, and diadems.

The bracelets, rings, and ear-rings are formed of metal wire, more or less thick, rolled round once or one and a-half times for the bracelets and rings, and as many as eight times for the ear-rings; these wires present a round section and are not at all ornamented.

We have five hundred of these ornaments in copper, three hundred in bronze, eight hundred in silver, and eight in gold; among these last there is a bracelet weighing 114 grammes.

The diadems are all of silver; two of them are made of a simple ribbon, 2 to 5 millimètres in width, going round the head; four others have on the front a flower or ornament made of thin plate, a good idea of it can be got from fig. 2, Pl. VII. One of these diadems was found on the skull of the woman who wore it; lastly, the seventh is a metal band 30 to 32 millimètres in width, the two ends overlap to the extent of 18 millimètres, one end is cut square, the other rounded; they are united by two

copper rivets; the circumference of the diadem is 537 millimètres; over the whole of its surface there has been traced an ornamentation consisting of a series of embossed dots made by pushing the metal outwards.

The necklace beads number about 4,000, the greater part of which are made of ordinary serpentine; there are others of precious serpentine, copper, bronze, silver, gold, ivory, earthenware, and wood. The necklace beads and the ornaments in general were richer in the women's tombs than in the men's, and those of the young women were richer than those of the old ones. The bones of animals placed near the deceased are almost always shin-bones of oxen; there are, however, also some graves with goats' bones. These remains of food clearly point to the belief in a future life. About five per cent. of the total number of burial places contained two skeletons, one of a man and one of a woman, their interments being probably successive<sup>1</sup> not simultaneous.

It can be seen from this brief sketch what progress civilisation had made; it had, however, to some extent freed itself from the foreign influence observed in the preceding period, and had come back to an independent existence; this is seen by the return to inhumation of the dead, by the absence of beads of hard stone and by the relative decrease in the number of bronze objects, compared with that of copper.

We think, therefore, that these people attained of themselves to the brilliant social condition we have shown, and that the discovery of native silver was the motive which impelled them to construct real entrenched camps within which they erected their dwellings; having found these riches they had to protect the soil against covetous invaders. Intercourse and exchange with the importer of bronze must therefore have been very limited. This importation is extremely probable, since there is no tin ore in this country.

The knowledge of silver by no means rendered necessary the metallurgy of lead and its desilverisation.

It is on account of the exceptional circumstances of this rich

<sup>1</sup> We have been able to collect eighty entire human skulls and a good number of limb bones. Dr. Jacques, Secretary of the Anthropological Society of Brussels, has studied these bones with great care; he distinguishes in the skulls four groups. The first belongs to the race called the Cro-Magnon race. The second presents much analogy to those which M.M. de Quatrefages and Hamy class in their third fossil race, and especially with the Furfooz skull No. 2, and some skulls of Grenelle; finally, the fourth exactly recalls the Ligurian type of Nicolucci. The three first groups have been recognised by the very few authors who have applied themselves to the ethnology of the Peninsula, and are found again, besides others, amongst the Basques of Zaraus, and St. Jean de Luz of Broca.

country that we find this beautiful metal in the hands of a people who hardly knew anything of bronze, and were ignorant of writing and the use of iron.

It is none the less true that we see them in possession of a highly organised civilisation, of which their respect for the dead gives a true index.

The development of this civilisation could not have lasted long: it was destroyed by an enemy about whom our excavations have taught us nothing; we have only discovered the ruins.

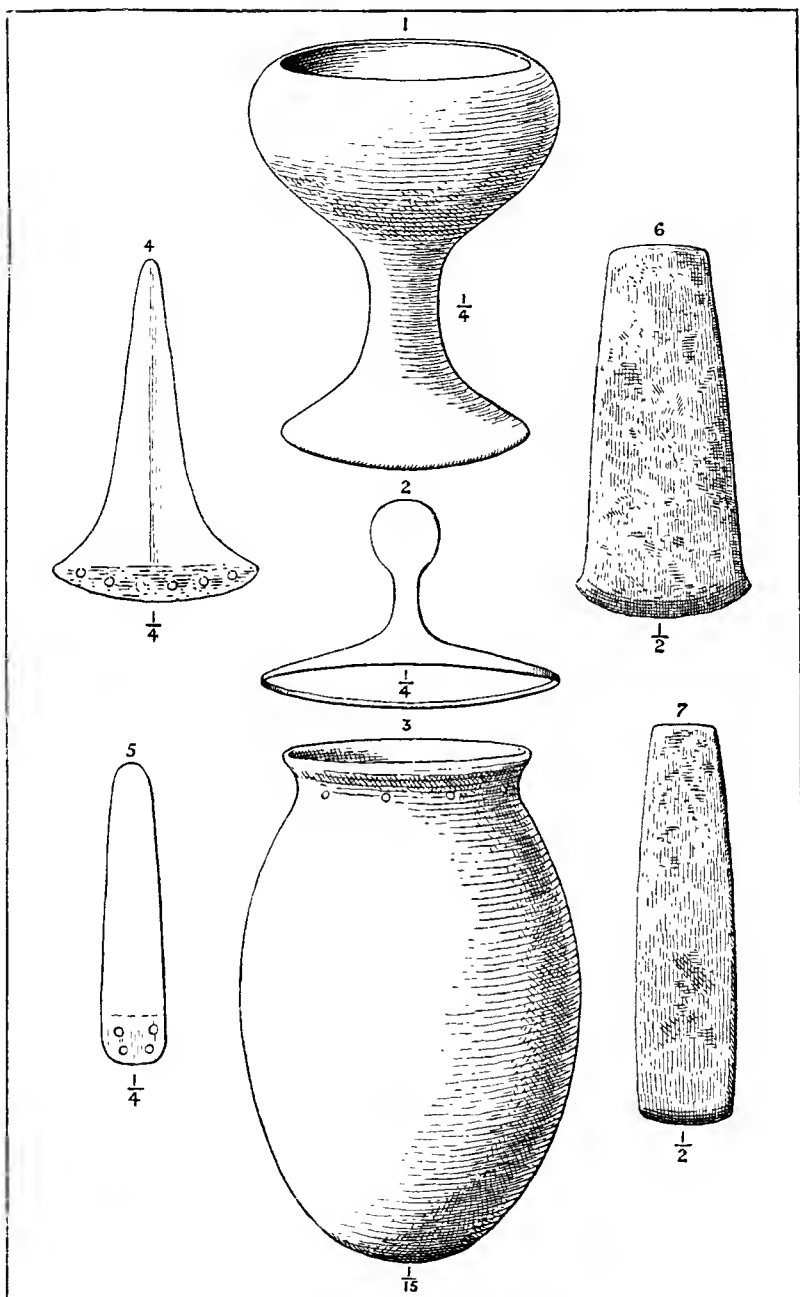
The third period of which we have spoken cannot have lasted very long; the weapons and implements would otherwise have been brought to a greater state of perfection. From calculations, based on mortality, the duration must have been from 100 to 300 years.

If we examine the other discoveries recorded in the Iberian Peninsula we find some resemblance between them and those of our two first periods; but the region in which the remains of our third civilisation have been found appears very limited. The native silver mines of the Herrerias are in the centre of this region, as one might expect. Besides our discoveries some others have been made in this country, by means of which we can trace the boundaries actually known of the region where these people had settled. Thus we find the following boundaries: on the east, the Mediterranean; on the north, Cartagena and Puebla de Don Fadrique; on the west, Caniles Alcúdia; on the south, Almería.

Outside Spain we find some curious resemblances between the objects of our collections and those of M. Schliemann's discoveries at Hissarlik. This is the nearest comparison we can institute.

### *Description of Plate VII.*

- Fig. 1. Earthenware cup on foot, representing a type not previously recognised among remains of the first bronze age.
  - Fig. 2. Silver diadem with frontal ornament. A similar diadem was found round the skull of a female in one of the internments.
  - Fig. 3. Ovoid sepulchral urn in coarse pottery, for containing the dead.
  - Fig. 4. Bronze halberd, with six silver rivets.
  - Fig. 5. Bronze poignard, or knife, with rivets.
  - Figs. 6 and 7. Flat copper axes of the transition period between the neolithic and the early metal ages.
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PREHISTORIC ANTIQUITIES FROM THE SOUTH-EAST OF SPAIN.



APRIL 10th 1888.

FRANCIS GALTON, ESQ., M.A., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The following presents were announced, and thanks voted to the respective donors :—

FOR THE LIBRARY.

- From the AUTHOR.—Notes and Observations on the Kwakiool People of Vancouver Island. By George M. Dawson, D.S., F.G.S.
- Die Physiognomik. Von Hermann Schaaffhausen.
- From the U.S. BUREAU OF ETHNOLOGY.—Perforated Stones from California. By Henry W. Henshaw.
- The Use of Gold and other Metals among the ancient inhabitants of Chiriqui, Isthmus of Darien. By William H. Holmes.
- Bibliography of the Eskimo Language. By James Constantine Pilling.
- Bibliography of the Siouan Languages. By James Constantine Pilling.
- Work in Mound Exploration of the Bureau of Ethnology. By Cyrus Thomas.
- From the ROYAL SCOTTISH GEOGRAPHICAL SOCIETY.—The Scottish Geographical Magazine. Vol. iv. No. 4. April, 1888.
- From the ANTHROPOLOGICAL SOCIETY OF WASHINGTON. The American Anthropologist. Vol. i. No. 1. January, 1888.
- From the ESSEX FIELD CLUB.—The Essex Naturalist. Vol. ii. No. 3. March, 1888.
- From the DEUTSCHE GESELLSCHAFT FÜR ANTHROPOLOGIE, ETHNOLOGIE, UND URGESCHICHTE.—Correspondenz-Blatt. 1888. Nr. 2-4.
- From the SOCIETÀ ITALIANA DI ANTROPOLOGIA, ETNOLOGIA, E PSICOLOGIA COMPARATA.—Archivio per l'Antropologia e la Etnologia. Vol. xvii. Fas. 3.
- From the ASSOCIATION.—Proceedings of the Geologists' Association. Vol. x. Nos. 3, 4.
- Journal of the East India Association. Vol. xx. No. 1.
- Journal of the Royal Historical and Archaeological Association of Ireland. Vol. viii. Nos. 73, 74.
- From the SOCIETY.—Journal of the Society of Arts. Nos. 1845, 1846.
- Proceedings of the Royal Geographical Society. Vol. x. No. 4.
- Proceedings of the Asiatic Society of Bengal. 1887. Nos. 9, 10; 1888, No. 1.

From the SOCIETY.—Journal of the Asiatic Society of Bengal. Nos. 276, 278–280.

— Bulletin de la Société Impériale des Naturalistes de Moscou. 1888. No. 1.

— Bulletin de la Société Neuchateloise de Géographie. Tome iii, 1887.

From the EDITOR.—Journal of Mental Science. New Series. No. 109.

— Nature. Nos. 961, 962.

— Science. Nos. 267, 268.

— Photographic Times. Nos. 339, 340.

— American Antiquarian. Vol. x. No. 2.

— Revue Scientifique. Tom. xxxv–xl. Tom. xli, Nos. 1–14.

CAPTAIN STRACHAN exhibited a Papuan boy, and described the circumstances under which he was brought from New Guinea.

The SECRETARY read a paper on “The Early Age of Metal in the South-East of Spain,” by MM. Henri and Louis Siret, which is printed above at p. 121.

MR. J. ALLEN BROWN exhibited a collection of small stone implements, and read the following paper:—

*On SOME SMALL HIGHLY SPECIALIZED FORMS of STONE IMPLEMENTS, found in ASIA, NORTH AFRICA, and EUROPE.*

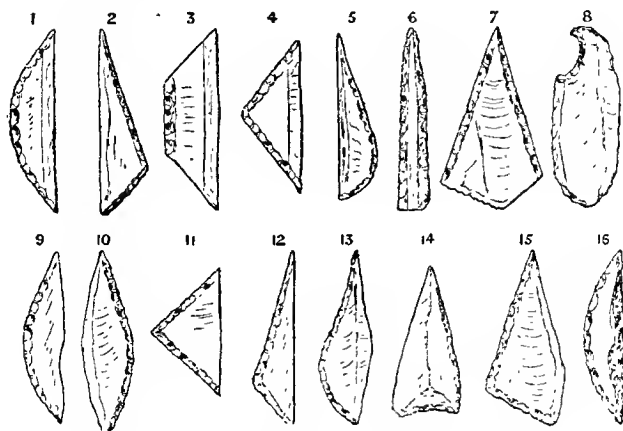
By JOHN ALLEN BROWN, F.R.G.S., F.G.S., &c.

DURING the past five or six years a large number of small implements formed of agate, jasper, chert, and flint have been found in India, Syria, Southern Europe, Africa, &c., to which I wish to call attention for the purpose of ascertaining whether they have been met with in the British Isles and other places not previously noticed.

These diminutive instruments, so highly specialized in form, have created some interest among French anthropologists, and they have been described and figured in papers and periodicals abroad, but notably in M. G. de Mortillet's very interesting and important magazine of anthropology, “L'Homme;” they have not, however, met with the attention in this country I think they deserve, nor have they, as far as I am aware, been noticed in British scientific serials.

These instruments are of various forms which are generally found associated together, crescent, quadrilateral, scalene and

obtusely triangular, while others may be described as thin, acute knifelets, very small spoke-shaves, &c. They rarely exceed five-eighths of an inch in length, and those of crescent shape very neatly worked on the convex side, and the long scalene and obtuse angle forms, as well as many of those of trapezoid shape, are often little more than half that size, as shown in the following figures.



SMALL STONE IMPLEMENTS. (*Natural Size*).

Figs. 1 to 8, from caves in the Vindhya Hills, Baghelkand, and Bundelkand, Banda, &c.

Figs. 9, 11, 12, 13, and 14, from Coincy L'Abbaye (Aisne).

„ 10 and 15, from Hédouville (Seine et Oise).

„ 16, from Bethlechem, Syria.

The whole series bears the impress of the same thought and intention on the part of the fabricators as shown in the definiteness which distinguishes the various forms, by the adoption of the same model and mode of producing them.

Now when, as will be seen, these results are noticeable in specimens obtained in different localities, in a definite direction, we are justified, I think, in assuming, not only that they indicate a peculiar industry, whatever the purposes may have been for which they were fabricated, but in suggesting that an industry so distinctive in character, probably represents the work of a particular race, or wave of population which has migrated westward in the direction in which they have been found.

These interesting instruments were, I believe, originally discovered by Mr. A. C. Carlyle, late of the Archaeological Survey of India, in the wild country of the Vindhya Hills, Central India, and he subsequently found them in other localities. A very

interesting collection of these objects with others of Palæolithic and Neolithic age, and early Buddhist relics was exhibited by him last year at the Royal Albert Hall,—the result of twenty-five years of exploration and hard service.

Mr. A. C. Carlyle found all the varieties of these small implements by hundreds in caves and rock shelters in places very difficult of access to the ordinary traveller, also below the northern scarps of the Vindhya in Bundelkhand, Mirzapur District, and Riwa. He met with similar forms (crescents and others) rather larger and much more coarsely worked south of Kalinjar, in the nullas of the Paisani River, Naro Hill, and Patar Kachâr, and also on the low ground of the Banda District, from which latter locality Mr. J. H. Rivett-Carnac also obtained them. The small instruments are described by him and figured in a paper entitled, "Stone implements from the North-West Provinces of India," Calcutta, 1883.\*

The most perfect specimens, according to Mr. Carlyle, were found in the caves and rock shelters alluded to, where they occurred in abundance associated with larger chipped implements, flakes, and small cores of agate, &c., and under such conditions as to indicate that these sites had been inhabited for a long period, and that they had been occupied as working places for the manufacture of these small instruments and others. It is worthy of note that polished or ground implements were never found associated with them.

I may here mention that the late Colonel Ryder found a large number of small spoke-shaves (fig. 8) with small knives, cores, &c., of a similar character on the southern slopes of the hills overlooking the Narbudda, near Jabbalpur,<sup>1</sup> of which examples are in my collection; it is noticeable that these objects were found on the southern slopes of the hills, which are often composed of alluvium, the northern flanks being now preferred by the people on account of the heat. It has been conjectured that these small cores when worked up to a point were used when fitted into bamboos, and secured with gum or other substance, as spears.

More interest, however, is attached to the caves and rock shelters at Marahna Pahâr (Vindhya) from the fact that very rude pottery, roughly and simply ornamented by strokes, perhaps produced with small flakes, rubbed down pieces of "Geru," or red hæmatite from the laterite deposits, and also rounded stones for pounding this mineral into a pigment, were found associated with the instruments.

<sup>1</sup> See "Some discoveries of worked flints near Jubbalpur in Central India," By Dr. J. Evans, "Proc. Soc. of Antiq.," 2nd Series, Vol. III.

This fact is curious as it suggests the employment of some of the small sharp knifelets for tattooing, and that the paint made from the hæmatite may have been used to colour the punctures and incisions.

Mr. Carlyle informs me that some few of the rudest aboriginal tribes of the wildest central parts of India still practise a modified and partial sort of tattooing, but only with deep blue or other dark or grey colour but never with red. Hindus use red and white, and sometimes yellow colours superficially without incisions which will wash off, as religious sectarial caste marks on their foreheads; these are the only instances, as far as I can learn, where such pigments are used either for embellishment or religious symbols in India now.

On the walls of some of the caves at Marahna Pahâr were rude drawings of men and animals painted in red, which were copied by Mr. Carlyle. These representations are of the usual child-like character which is seen in similar pictographs of savage races; they may be, judging from their appearance, the earliest efforts of these cave dwellers to write their thoughts.

The upper stratum of the caves contained the crescents, trapezoids, triangular forms, and thin delicate knifelets, but beneath it, separated distinctly by a line of stratification, were much older implements, and of much larger size, formed of indurated sandstone, quartzite, and chert.

Small crescent and other implements of exactly the same types were found by Mr. Carlyle in some grave mounds excavated by him, showing that probably the same people raised them who made the rude unecoth red paintings or pictographs in the caves and rock shelters.

These peculiar instruments are different in shape and make from the usual objects of Neolithic work. They have been described in an article by M. Adrien de Mortillet ("L'Homme," 1884, p. 145), who says that the crescent instrument, the most marked form, has been found at Tunis by M. G. Belluci, and that the French soldiers obtained a quantity of them at Gabes. Mr. Haynes found them and some of the other varieties in Egypt, in fact they have been met with in all the north of Africa.

They are not rare according to M. A. de Mortillet in Italy, and the rhomboidal flints of M. de Chierici he believes belong to the same class.

Among the flint implements obtained by Sir Richard Burton from Bethlehem, and figured and described in his paper, "On Anthropological Collections from the Holy Land" ("Proc. Anthro. Inst.," No. 1, 1872) is the exact counterpart of one of the crescent instruments from India, and other places to be mentioned: fig. 16 was found at Bayt Sahlur, a village a short

distance from Bethlehem, associated with worked knife flakes, &c., all of which appeared to be discoloured by exposure or other causes, "on a ledge of chalky limestone with a drop of rock, and a bed of garden stuff to the north, while behind, or southwards, are steps of higher ground over which runs the rugged road to Bethlehem." Dr. J. Evans says of this group of implements, in which opinion I concur, that the same forms are found "among the refuse heaps of the south of France, and unless the associated fauna prove that such cannot be the case, they are doubtless of Neolithic age, and probably of much the same date as the instruments of similar character from Sinai."

It is very remarkable that small flint implements identical in form with the crescents and others have also been found in France (Languedoc and Gascogne). They have been described by M. A. de Mortellet from Hédonville (Seine et Oise) figs. 10 and 15, and also from near Coincy L'Abbaye, Canton de Fère en Tardenois (Aisne), figs. 9, 11, 12, 13, 14, where they were found by M. Emile Tate; these are all figured in "L'Homme" (of 25th August and 25th November, 1885).

The series from Coincy L'Abbaye it would be difficult to distinguish from those discovered by Mr. Carlyle in the caves and rock shelters of the Vindhyas.

Neatly worked triangular instruments of similar manufacture and others are now in the Musée Broca, collected by M. Fortoul from the dolmen of St. Laurent (Basses Alpes), and M. Cartailac has found in the ... of Portugal small flint implements of trape. ...

Lastly, M. Méréjkowski discovered near Kizilkoba in the Crimea a working place, where most of the varieties of these curious small instruments were well represented. (See "Premières recherches sur l'âge de la pierre en Crimée en Russe," St. Petersburg, 1880).

It is evident, I think, that these peculiar types of implements are of Neolithic age; the commencement of that period and the conclusion of the Palaeolithic shows no definite line of demarcation in India. We shall probably, sooner or later, come to the conclusion that there is really no hiatus between them in Southern Britain: in fact no very good reason has been given why there should be a gap. Recent discoveries show that some of the later Palaeolithic forms closely approach earlier Neolithic types, as shown by many of the specimens found at Cissbury, and in the upper deposits of some of the caves; we only require more evidence of the fauna which continued into early Neolithic times in Southern Britain to complete the bridge as Mr. Carlyle believes is the case in India, where, he says, the Palaeolithic and Neolithic periods are connected, as far as the types of the

implements go, by certain forms which appear to be intermediate and to which he has applied the term *Mesolithic*.

In this connection it is worth noticing that two trapezoidal Paleolithic implements, about  $1\frac{3}{4}$  inches in length, were found in one of the upper strata of cave earth in Kent's Cavern. They are described, and one of them is engraved, in Dr. John Evans elaborate work ("*Ancient Stone Implements*," fig. 400). He says, "both the two sloping ends and the short side are worn by use, while the long side is unscathed," and he tells us he is not aware of this form of instrument having as yet been noticed elsewhere.

Although some of the triangular flints may have been used as arrow points, many of them are too small for that purpose, and they differ in many respects from Neolithic arrow-heads. Moreover the less highly finished triangular chipped flakes of larger size, similar to those generally believed to have been used for pointing arrows are associated with them in India and elsewhere.

It is not easy to determine the purpose for which the small crescents, trapezoids, scalene triangular, the similar form rounded at one end (figs. 5 and 13), and the long, thin, delicate knifelets, &c., all which are often beautifully worked with minute secondary chipping, were made.

It has been suggested that some of them may have been employed for tattooing. There must have been other uses, however, to which the other forms were applied, and the large number found in certain localities in India, all worked on the models of the varieties shown in the drawings, points to the general employment of these instruments among the tribes who used them, and of the continuous demand for these objects.

Whatever the purposes for which they were fabricated by the Indian cave dwellers and others, they clearly represent a special kind of industry, and it may ultimately be shown that they are the work of a particular race which, emanating from Central India, migrated and spread out in a north-westerly direction through Syria to the Crimea, along the north and south shores of the Mediterranean to France and Portugal, and is not improbable that they will be found on the surface or in the latest river beds of Britain.

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APRIL 24TH, 1888.

FRANCIS GALTON, Esq., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The election of GEORGE HODDINOTT, Esq., of 19, Nassington Road, Hainpstead, was announced.

The following presents were announced, and thanks voted to the respective donors :—

FOR THE LIBRARY.

From A. L. LEWIS, Esq.—The Antananarivo Annual and Madagascar Magazine. No. 4, Christmas, 1878.

From the AUTHOR.—Ueber die Zeit des ersten Auftretens der Buche in Nord-Europa und die Frage nach der Heimath der Arier. Von K. Penka.

From the MITCHELL LIBRARY, GLASGOW.—Report, 1887.

From the YORKSHIRE PHILOSOPHICAL SOCIETY.—Annual Report for 1887.

From the SOCIÉTÉ ARCHÉOLOGIQUE, AGRAM.—Viestnik hrvatskoga Arkeologičkoga Društva. Godina x. Br. 2.

From the SOCIETY.—Journal of the Society of Arts. Nos. 1847-1848.

— Proceedings of the Society of Biblical Archæology. Vol. x. Part 5.

From the EDITOR.—Nature. Nos. 963, 964.

— Science. Nos. 269, 270.

— Photographic Times. Nos. 341-343.

— Revue Scientifique. Tome xli. Nos. 15, 16.

The following paper was read by the Secretary :—

CAMBRIDGE ANTHROPOMETRY.

By JOHN VENN, D.Sc., F.R.S.

A few years ago, Mr. Galton instituted a small anthropometric laboratory at South Kensington, during the time of the International Health Exhibition. The principal results of the measurements carried out there, and which embraced 9,337 persons, were published in the "Journal of the Anthropological Institute," for February, 1885; and in June, 1885, Mr. Galton

was appointed Rede Lecturer at Cambridge, and chose as the subject of his discourse, the nature, principles, and objects of the quantitative estimate of some of the less commonly, and less easily, measured of the human faculties. In order to perpetuate such interest as was excited by the results of this lecture Mr. Galton presented a set of instruments, similar for the most part to those which had been in use for South Kensington, to a small Committee at Cambridge, for corresponding use there. Some difficulty was experienced at first in choosing a suitable room in which the measurements could be carried out, as the University has but little available space, and unless some room could be found the position of which should bring the subject prominently under the notice of the students, no very extensive results could be hoped for. At first the committee-room of the Union Society was put at our disposal, but this was not very long available, as some demur was made by the authorities there to the use of the room by undergraduates who were not members of the Society. After a time the library of the Philosophical Society, situated in the centre of the new museums and lecture rooms, was secured, and the measurements were taken there by Mr. White, the Librarian of the Society. The bulk of the measurements here discussed were taken by him.

As regards the instruments themselves little need be said, as most of them were fully described by Mr. Galton ("Journ. Anthrop. Inst.," February, 1885). They consisted of the following:—

1. For measuring keenness of eye-sight. This assigns the distance to the nearest odd number (up to 35 inches) at which "diamond type," *i.e.*, that of the ordinary little shilling prayer-book, could be read. The power of each eye was separately determined. (In the present case diamond *numerals* were used).

2. For measuring strength of "pull." The essential part of the instrument consists of two handles connected by an elastic spring. One is held in each hand, and they are then drawn apart as far as possible, by an action resembling that of an archer drawing a bow. The particular exertion of force thus called for is, I apprehend, an unusual one for most persons at the present day. It produces the feeling, if I may judge from my own experience, of acting under very awkward circumstances, and at considerable mechanical disadvantage. Perhaps the only familiar exertion of force which at all resembles this is that which we have to put out in drawing the cork from a bottle; but in this case the hands are held much nearer together.

3. For measuring strength of "squeeze." The essential part

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3. For measuring strength of "squeeze." The essential part

consists of two bars, some three or four inches apart, separated by a spring. They are squeezed together as close as possible and the result read off on a diagram. The power of squeezing thus possessed by each hand is indicated separately in our results. The instrument cannot be regarded as very accurate, since the effective range through which the muscles of the hand can thus work is but small. For purposes of intercomparison, where the same instrument is in use, this does not much matter, but one would have to be cautious in comparing the results obtained at Cambridge with those previously obtained by a different instrument at South Kensington.

4. Head measurement. Two instruments made by the Cambridge Scientific Instrument Company. One measures the maximum length and breadth; the other measures "the maximum height above the plane that passes through the upper edges of the orbits and the orifices of the ears." The magnitudes are assigned to the tenth of an inch.

5. Breathing capacity. "A spirometer is used, made by a counterpoised vessel suspended in water. When the air is breathed into it through a tube, the vessel rises, and the scale at its side shows the number of cubic inches of displacement. The person to be tested fills his chest and expires deeply three or four times for practice; then, after a few seconds rest, he tries the spirometer," as described by Mr. Galton in the South Kensington records.

6. Height without shoes. This is estimated from the measurement in shoes, deduction being made for the measured thickness of the heels, to the tenth of an inch.

7. Weight. This is estimated, in ordinary indoor clothing, to a quarter of a pound.

Altogether, therefore, it is seen that eleven distinct measurements are made and recorded of each person.

When a sufficient number of results had been obtained to furnish a fairly stable basis of experience I was requested by Mr. Galton to undertake an analysis of them, and a comparison of their general outcome with that of those obtained by almost identical instruments at South Kensington. Before proceeding to do this one or two general remarks must be made. In the first place, then, though the actual number of results may not be very large, they are really, for purposes of statistical accuracy, much more extensive than they may seem to be. This is owing to the homogeneousness of the class of persons here represented. At South Kensington more than 9,000 persons were measured; but then these included not only both sexes and very various ages, but the subjects of them belonged to widely different professions and social ranks. To any one who knows the compo-

sition of the English Universities it need hardly be remarked that the overwhelming majority of the students there belong to what may be called the upper professional and gentle classes; and to any one who knows anything of the elements of statistics it need not be added that the more homogeneous our class the smaller the number of instances required in order to establish any conclusions referring to that class.

The subjects of measurement mostly belonged, as just remarked, to the upper professional class. They had, therefore, in most physical respects been made the most of, *i.e.*, they had always been well fed and clothed, and had started well by being the progeny of parents who had mostly for some generations enjoyed the same advantages. They may therefore be supposed to represent as good a type physically as any class of Englishmen, under existing social circumstances, can be expected to show.

The principal interests of the results now in hand, however, depend upon the conclusions that can be drawn about the intellectual characteristics, and the correlation of these with the physical. Any classification of this sort has not, I believe, been attempted before, at any rate on any similar scale, nor is it easy to see under what other circumstances such a classification could be carried out. If any one will reflect for a moment upon the vagueness with which the terms "clever" or "able," &c., are applied to human beings, and upon the abundant sources of bias and confusion which attend their application, he will recognise at once that it is no easy thing to make even a rude division founded on intellectual characteristics. Some kind of objective standard, *i.e.*, one about which no dispute can be raised, must be employed, or the results would be comparatively worthless. Something might possibly be done in this way, by comparing, say, the privates in the engineers (who are all, I believe, required to have learnt some trade) with those in an ordinary infantry regiment; or by comparing the foremen in workshops with the common workmen. But even in these cases the intellectual qualification only enters slightly and indirectly, and as one out of a variety of elements.

At Cambridge no difficulty was felt on this score, and all that was required was some trouble on the part of the tutors of the various colleges, who all most kindly gave me their assistance. A three-fold division was adopted, distinguished here as A, B, and C. By A is meant a first-class man, in any Tripos examination, or one who is a scholar in his college. By B is meant all the remaining "honour men," and by C those who may be called "poll-men," *i.e.*, candidates for the ordinary degree. The "plucked" men, of course, if any such presented themselves, fell into this category.

Every Cambridge man will be able to appreciate the value which ought to be assigned to such a distinction in respect of accuracy and general significance. But for the benefit of others a few words of explanation may be added. Lists were drawn up of the men who had been measured, separated according to their colleges, and the tabulation of them was obtained from the tutors. Of course, in the case of graduates, the grounds of distinction were simply a matter of fact; but in the case of those who had yet to take their degree, an estimate had to be made. But in these days of much examination, and with the thorough knowledge possessed at present by most of the tutors as to the capacity and attainments of their pupils, very little hesitation was felt in the distribution of the characteristic marks. Had the decision been left to a jury of the men themselves, the results would have been almost the same: indeed, if each man had undertaken to label himself, it is not likely that any difference would have been produced sufficient to have any serious effect upon an average.

The question of the general significance of this decision is a somewhat different one. I do not want to overrate its importance, but it seems to me about as good as any such intellectual test can be. The modern Triposes, or honour examinations, are numerous and various, and give an opening to every kind of capacity and attainment. The only defect entailed in such a method, and it must be admitted that it is an unavoidable defect, consists in the fact that a certain proportion of men of equal capacity with the most successful fall into the ranks of the non-reading, owing to indolence or counter attractions of other kinds, or occasionally from ill-health. This must be allowed for what it is worth. But to any one who is inclined to underrate the value of such a distinction, I would ask, where else can anything approaching to it in value and correctness be obtained? Let any one try to picture the results of dividing into "very good," "good," and "indifferent," in respect of their intellectual capacity, the members of any trade or profession, or those who follow art or science, on some system which shall not only be agreed to by any impartial jury, but shall even be accepted by the persons themselves, and I think he will see that there is comparatively not much to complain of in the results here discussed.

One more remark may be added. It is sometimes the practice to despise the "poll-man," as if he were intellectually but a very poor specimen. His absolute value may not be great, but measured by the standard of ordinary English culture, he is by no means bad. On the average he is quite up to the level of the professional man, clergyman, lawyer, doctor, military man, and so forth, in fact he forms a large element of the more

cultivated part of these classes ; and all these classes represent the sifting out, by an intellectual test, from the mass left behind.

The outcome of all this may be thus described. We are concerned here, broadly speaking, with the upper professional class of Englishmen. Our students are, as regards their physical characteristics, a purely chance group from this class ; but as regards their intellectual characteristics, they must be considered as very decidedly selected. As soon as they have come into residence we are able to sub-divide them, with a very fair approach to accuracy and confidence, into three classes, turning on intellectual considerations alone.

There seem to be three main enquiries of interest here, which may be briefly noticed in turn :—

I. We may compare the students, as a class, with the miscellaneous persons measured at South Kensington.

II. We may compare the A, B, C classes with each other, in order to determine whether any physical characteristics, for better or for worse, are associated with the intellectual distinctions.

III. We may examine, within each of these classes, whether any physical alteration, and if so, in what direction, is found to display itself, between the ages of nineteen and twenty-four.

I. As regards the first point, the best way of illustrating the import of our statistics will be to adopt a plan resembling that of Mr. Galton's *percentiles* :—

Class.	Height in inches.	Strength of pull (lb.).	Squeeze (strongest hand).	Breathing capacity (cubic inches).
1st ten ..	72 to 77·8	102 to 155	103 to 125	305 to 400
2nd ten ..	71 — 72	95 — 102	98 — 103	284 — 305
3rd ten ..	70·2 — 71	90 — 95	94 — 98	274 — 284
4th ten ..	69·5 — 70·2	86 — 90	90 — 94	265 — 274
5th ten ..	68·9 — 69·5	83 — 86	87·5 — 90	254 — 265
6th ten ..	68·3 — 68·9	80 — 83	86 — 87·5	248 — 254
7th ten ..	67·6 — 68·3	76 — 80	82·5 — 86	235 — 248
8th ten ..	66·8 — 67·6	72 — 76	78·5 — 82·5	223 — 235
9th ten ..	65·6 — 66·8	68 — 72	73 — 78·5	209 — 223
Lowest ..	60·1 — 65·6	35 — 68	45 — 73	90 — 209

On this scheme the total numbers are supposed to be reduced to the scale of 100, and these to be then divided into ten equally numerous classes. There are several advantages about this method. For one thing any subject of measurement can at once see whereabouts on the scale he stands. Thus, a man of 5 feet 8 inches, who can "pull" 81 lb., can "squeeze" 88 lb., and can "breathe" 270 inches, stands respectively in the 7th, 6th, 5th, and 4th classes. The central line dividing the 5th and 6th classes corresponds to the mean or average man. But the main objects here are to display the extremes of range, and, still more important, to display the law of grouping or "Law of Error" between those extremes. Any one who chooses to examine the numbers in each class will find that the law of dispersion here corresponds pretty closely to the normal one known as the Binomial or Exponential Law.

The total number of men measured here was 1,450. In the tables which follow there are only 1,095, as deductions had to be made for those about whose position in the A, B, and C classes there was some uncertainty, and for other causes. When the mean of these, and of the remaining elements common to the two sets, is compared with the mean of some of those of South Kensington, the result is as follows:—

		Height.	Pull.	Squeeze.	Breathing.	Weight.
Cambridge..	..	68·9	83	87·5	254	153·6
Kensington	..	67·9	74	85	219	143

At first sight the superiority of the former will seem enormous, and after all deductions are made the disparity remains considerable, and gives abundant justification to the conclusion of Dr. Roberts as to the high physical characteristics of the English upper professional class.

As regards height, no qualification is needed, and no statistician will need to be told what a very large amount is represented by an *average* difference of one inch.

In regard to the other elements we must remember that the Cambridge measurements consist almost entirely of men between 19 and 25, whilst those at Kensington consist of men between 23 and 26, over which period they are presumably distributed evenly. In respect, therefore, of *weight*, which increases with age, the real difference between the two is somewhat underrated. But in respect of muscular strength and breathing

power, where there is a loss with each successive year after 23 or 24, the difference is possibly overrated. Another cause of error probably lies in the necessary imperfection of the instruments for measuring muscular strength. For reasons previously given, I should much doubt if their indications can be relied on within two or three pounds. With the spirometer, it is otherwise, and the difference here (after necessary qualification) is very great. It indicates what a largely superior breathing capacity is inherited or acquired by the practice of continued out-door exercise from childhood.

II. We now come to the main subject of interest so far as our university students are concerned, viz.: Is there any difference, and, if any, what is the nature and magnitude of it, between the physical characteristics of our A, B, and C classes? The following tables contain all the information available upon this subject. They give the measurements of all the students as to whose intellectual status definite information was attainable, viz., 258 A, 476 B, and 361 C; or a total of 1,095. The first eleven columns contain the separate measurements as described at the commencement of this paper. The twelfth and thirteenth give the mean of the right and left eye power, and right and left squeeze. The fourteenth gives the product of the head measurements, and is therefore proportional to the total head capacity.

A mere glance at the tables will serve to show the following facts:—

(1.) In respect of height, weight, breathing and squeezing power, there is little or no difference between any of the classes.

(2.) In respect of eyesight there is a decided inferiority in the A's as compared with the B's and C's taken together; and in respect of the "pull," a similar inferiority of A to B and B to C.

(3.) In respect of head-measurement there is a decided superiority of A's over B's and B's over C's.

But something more than this must be attempted. When we are dealing with statistics, we ought to be able not merely to say vaguely that the difference does or does not seem significant to us, but we ought to have some test as to what difference would be significant. For this purpose appeal must be made to the theory of Probability. Suppose that we have a large number of measures of any kind, grouping themselves about their mean in the way familiar to every statistician, their degree of dispersion about this mean being assigned by the determination of their "probable error." And suppose that we take at random two batches of  $m$  and  $n$  from these measures. Then we know that if  $p$  be the probable error of the single

measures, that of the difference between the means of any two of these batches will be  $p \sqrt{\frac{m+n}{mn}}$ . Comparing, for instance the A's and C's, where the numbers are respectively 258 and 361, we have  $\sqrt{\frac{m+n}{mn}} =$  approximately one-twelfth. That is, the differences between the means of such large numbers, had they been a true chance selection, would have displayed a probable error of only one-twelfth of that of the single measures. All that then remains to be done is to calculate the probable error of each of these elements separately, which is done in the usual way by determining the "error of mean square." They are as follows, in the case of the only elements about which any doubt can arise:—<sup>1</sup>

Probable error of individual	eyesight	= 3·7 inches.
"	"	"pull" = 7·6 pounds.
"	"	O.S. head measurement = ·145 inches.
"	"	F.B. " = ·173 inches.
"	"	A.B. " = ·186 inches.

For instance, the difference in the mean length of clear vision between the A's and the C's is about an inch and a quarter; that between the same classes, of the age of 24, is slightly more, viz., about an inch and one-third. But the former is the difference between the means of 258 and 361, the latter that between means of 25 and 13. By the formula above given we find that the respective probable errors of the differences between these means are one twelfth and one-third of 3·7 inches, *i.e.*, about ·3 inches and 1·2 inches. The latter is almost exactly the observed difference, which is therefore seen to be quite insignificant. The former is about one quarter of the observed difference, which is therefore highly significant: for the odds are about 25 to 1 that a measure of any kind shall not deviate by three times its probable error.

The above remarks are somewhat technical, but their gist is readily comprehensible. They inform us which of the differences in the above tables are permanent and significant, in the sense that we may be tolerably confident that if we took another similar batch we should find a similar difference; and which of them are merely transient and insignificant, in the sense that another similar batch is about as likely as not to reverse the conclusion we have obtained.

Unaided common sense might possibly have found its way

<sup>1</sup> O.S. signifies here "opposite sides," *i.e.*, from temple to temple. F.B. signifies "front to back." A.B. signifies "above the brow," a line being drawn from brow to earhole.

aright here in the case of the eye-sight, and the "pull," but it would hardly have done so in the case of the head-measurements. For instance, the difference between the mean "front to back" measurements in the case of the A's and C's is only about the tenth of an inch; a quantity hardly appreciable to ordinary observation. But when we observe that this quantity is about seven times the probable error we see that its chance occurrence is excessively unlikely.

The drift of these last remarks is simply to justify the summary conclusions which were drawn two pages back. They enable us to say not merely that the differences in question have actually presented themselves in the given range of statistics, but that they may be confidently expected to do so in future under similar circumstances.

We find then that, in regard to all the ordinary elements of health and strength, there does not seem to be the slightest difference between one class of our students and another: that is, they are equally tall, they possess the same weight, the same muscular strength of hand, and the same breathing capacity,—this last characteristic probably carrying a good deal along with it. The only exception here is in respect of the "pull," which is not very easily accounted for. If the practice of rowing were specially the amusement of those who do *not* read, we should have a plausible explanation; but I hardly think that any one who knows the habits of our students would say that this is the case. With this exception we may say that there is nothing in the previous habits of life of the reading men, in their inherited condition of body, or in the pursuits they follow when in residence, to give them any physical distinction for better or worse as regards what is commonly understood by "strength."

In respect of eye-sight there is a difference. The high honour men have a certain slight but pronounced inferiority in this respect. But this characteristic requires a little closer attention. In the case of each of the other measured elements the usual law of error is justified, that is, the variations on each side of the mean are symmetrical, and fall off very rapidly as we recede from the mean (a glance at the first table will display this characteristic in the case of the four elements there represented). But the full course of the curve of facility of eyesight is not represented. It stops abruptly at 35 inches, owing to the instrument not being graduated beyond this point, so that the assigned mean is not the true mean. But again, the case in question is one in which the arithmetic mean itself is not, taken alone, a fair test. This will be seen by a glance at the actual statistics in the case of our A men. The number measured was 260, the power of both eyes being separately determined.

Inches	0	1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	Total
Men ...	18	0	0	8	14	19	12	28	18	22	18	39	53	36	52	58	50	32	41	520

The ordinary mean here, viz., 22·7, is obviously an imperfect guide in respect of both the above considerations. What we ought to do is to consider the men who are marked with 0 (viz., those who could not see to read at any distance without glasses) separately. And in respect of the others what we ought to do, owing to the obvious asymmetry of the curve of frequency, is to take not the arithmetic mean but what is called the "point of maximum frequency," as this is a far truer index of what may be considered the normal length of vision. But any successful appeal to this requires far more extended statistics than those at our disposal.

When we separate the men of "no sight" (without glasses) we find that the prominent distinction between the reading and non-reading classes lies here; the number of these, per thousand, amongst the A, B, C, being respectively 34, 13, and 16. When these are subducted, the difference between the remaining groups is diminished, and does not appear to me to be very significant. That is, the main characteristic of the reading men is that a larger proportion of them are distinctly short-sighted.

In respect of head measurement, the difference, though actually small, seems decisive. The three dimensions are as follows:—

	O.S.	F.B.	A.B.	Product of the three.
A .. ..	5·99	7·66	5·33	244·56
B .. ..	5·93	7·57	5·30	237·91
C .. ..	5·91	7·55	5·31	237·33

III. The only remaining point is the consideration of the laws of growth and decay within the limits of age here considered, in respect of each of the capacities measured.

The general conclusions seem to be the following:—

1. Eye-sight. There seems, on the whole, a decided decline from the age of 19, and to much the same extent in the case of each of the three classes. The only exception is about the age of 24, where there appears to be a marked revival. As to the explanation of this latter fact, I have no conjecture to offer

in the absence of specific information as to the general character and habits, &c., of the men of this age.

2. As regards the power of pulling, squeezing, and breathing, there is a maximum about the age of 23 or 24, after which the strength seems to begin to fall off.

3. The height shows no apparent growth after 19.

4. The weight on the whole shows a tendency to continuous increase.

5. As regards the head-measurement, there seems to be a small, but decided increase after the age of 19, in the case of all the students alike.

As these changes appear to be about the same in the case of the A, B, and C men, it will be convenient to throw the three classes into one, in order to secure the stability of larger numbers. The results are given in the following table:—

Age.	Eye (mean).	Pull.	Squeeze.	Breath.	Weight.	Head.	Nos.
19	25·5	81·0	82·0	251	151	234·7	139
20	24·3	82·3	83·9	253·5	152·5	238·0	305
21	23·4	83·9	83·7	256	153·5	238·6	248
22	23·6	86·8	85·7	261·5	153·5	242·7	189
23	21·8	82·4	85·0	260·0	155	239·7	83
24	24·3	88·7	87·3	258	158	247·0	52
25	22·4	80·9	82·3	251	155	244·6	79
							1095

(A.)

Age.	Sight.		Pull.	Squeeze.		Head			Breath.	Height.	Weight.	Sight (mean).	Squeeze (mean).	Head (product).	No. of (measures).
	R.	L.		R.	L.	O.S.	F.B.	A.B.							
19	24.1	22.8	75.4	81.5	78.8	5.97	7.66	5.29	219	69.07	147	23.4	80.2	241.91	17
20	23.9	23.8	81.0	86.0	82.5	5.95	7.67	5.35	255	69.17	151.8	23.8	81.2	244.15	54
21	23.2	23.6	81.4	85.1	80.2	5.94	7.63	5.33	256	68.91	153	23.4	82.6	241.03	52
22	21.5	21.6	81.8	86.7	82.8	6.04	7.72	5.32	262.5	68.63	154.1	21.5	84.8	248.06	50
23	19.6	20.9	80.7	87.0	84.1	6.04	7.54	5.37	262	69.66	151.8	20.2	85.6	244.55	27
24	23.0	24.1	87.6	87.1	82.4	6.06	7.71	5.26	261	68.58	155	23.5	84.7	245.76	25
25	22.6	22.6	79.7	84.0	78.5	6.04	7.69	5.35	246	68.64	155	22.6	81.2	248.94	33
Mean	22.6	22.8	81.3	..	..	..	..	..	256.2	68.93	154	22.7	83.5	244.94	258

## (B.)

Age.	Sight.		Pull.	Squeeze.			Head.			Breath.	Height.	Weight.	Sight (mean).	Squeeze (mean).	Head (product).	No. of (measures).
	R.	L.		R.	L.		O.S.	F.B.	A.B.							
19	24.9	25.2	80.4	83.3	79.3		5.93	7.53	5.31	251.5	68.78	150	25.0	81.3	237.10	70
20	24.3	24.1	82.9	85.7	83.4		5.93	7.57	5.30	254	68.94	152.5	24.3	84.5	237.91	149
21	23.6	23.6	83.4	86.3	81.9		5.92	7.57	5.26	256	68.69	152.5	23.6	84.1	236.40	117
22	25.6	25.3	86.4	86.2	83.5		5.95	7.62	5.33	261	69.31	152.3	25.4	81.8	241.65	73
23	23.4	23.4	80.2	84.7	81.3		5.95	7.55	5.32	262	69.48	155	23.4	83.0	238.98	33
24	25.3	26.5	93.0	93.0	89.0		6.04	7.73	5.38	269	69.57	163.5	25.4	91.0	251.18	14
25	23.6	21.3	85.4	90.4	85.4		5.92	7.57	5.32	267	69.34	159.8	22.4	87.9	239.10	20
Mean	24.3	24.3	83.1	..	..		..	..	..	256.2	68.95	153	24.1	84.1	238.42	476

(C.)

Age.	Sight.		Pull.	Squeeze.		Head.			Breath.	Height.	Weight.	Sight (mean).	Squeeze (mean).	Head (product).	No. of (measures).
	R.	L.		R.	L.	O.S.	F.B.	A.B.							
19	25.3	25.8	83.6	80.9	80.2	5.77	7.52	5.28	250	68.93	153	25.5	83.5	229.10	52
20	24.7	24.3	82.2	84.8	79.2	5.91	7.52	5.29	252	68.87	152.7	24.5	82.8	235.10	102
21	23.7	22.4	86.3	86.3	82.2	5.94	7.56	5.35	255	68.96	155.5	23.0	84.2	240.24	79
22	23.5	23.2	91.1	89.3	85.8	5.97	7.57	5.31	261	68.64	154	23.3	87.5	239.97	66
23	21.0	21.6	87.5	89.7	84.7	5.91	7.53	5.28	254	69.31	158	21.3	87.2	234.97	23
24	24.3	25.3	86.3	89.8	87.0	5.97	7.68	5.33	240	68.00	156	21.8	88.4	244.37	13
25	21.6	22.8	79.2	81.9	77.2	6.02	7.56	5.34	244	67.59	152.5	22.2	79.5	243.48	26
Mean	23.87	23.77	85.2	..	..	..	..	..	253.0	68.76	154	23.7	84.1	237.20	861

The following paper was read by the President :—

*On HEAD GROWTH in STUDENTS at the UNIVERSITY of  
CAMBRIDGE.*<sup>1</sup>

By FRANCIS GALTON, M.A., F.R.S.

[WITH PLATE VIII.]

IN the memoir just read by Dr. Venn upon the measurements made, during the last three years, of the students of Cambridge, one column is assigned to what he terms "Head Products," and which may fairly be interpreted as "Relative Brain Volumes." The entries in it are obtained by multiplying together the maximum length and breadth of the head and its height above a specified plane. The product of the three determines the contents of a rectangular box that would just include the portion of the head referred to. The capacity of this box would be only rudely proportionate to that of the skull in individual cases, but ought to be closely proportionate in the average of many cases. The relation they bear to one another affords, as it seems to me, a trustworthy basis for the following discussion, especially as all the measurements were made not only on a uniform plan, but by the same operator.

It will be convenient to reproduce Dr. Venn's figures in a separate table, neglecting the second decimal :—

*Head Products.*

Ages.	Class A. "High honour" men.	Number of measures.	Class B. The remaining "honour" men.	Number of measures.	Class C. "Poll" men.	Number of measures.
19	241·9	17	237·1	70	229·1	52
20	244·2	54	237·9	149	235·1	102
21	241·0	52	236·4	117	240·2	79
22	248·1	50	241·7	73	240·0	66
23	244·6	27	239·0	33	235·0	23
24	245·8	25	251·2	14	244·4	13
25 and upwards	248·9	33	239·1	20	243·5	26
		258		476		361

The figures in the table are thrown into diagrams I, II, and III (Pl. VIII), in which curves are also drawn to interpret what seems to be their significance. The great irregu-

<sup>1</sup> This paper appeared in "Nature," of May 3, and the editor of that Journal has obligingly supplied the diagrams in Pl. VIII.

larity in fig. II, corresponding to the age of twenty-four, may be fairly ascribed to the smallness of observations, only thirteen in number, on which it is founded. The three resultant curves are shown by themselves in fig. IV, where they can be easily compared. It will then be seen that the A and C curves are markedly different, and that the B curve is intermediate. Accepting these curves as a true statement of the case—and they are beyond doubt an approximately true statement—we find that a “high honour” man possesses at the age of nineteen a distinctly larger brain than a “poll” man in the proportion of 241 to 230·5, or one that is almost 5 per cent. larger. By the end of his College career, the brain of the “high honour” man has increased from 241 to 249; that is by 3 per cent. of its size, while the brain of the “poll” man has increased from 230·5 to 244·5, or 6 per cent.

Four conclusions follow from all this:—

(1.) Although it is pretty well ascertained that in the masses of the population the brain ceases to grow after the age of nineteen, or even earlier, it is by no means so with University students.

(2.) That men who obtain high honours have had considerably larger brains than others at the age of nineteen.

(3.) That they have larger brains than others, but not to the same extent, at the age of twenty-five; in fact their predominance is by that time diminished to one-half of what it was.

(4.) Consequently “high honour” men are presumably, as a class, both more precocious and more gifted throughout than others. We must therefore look upon eminent University success as a fortunate combination of these two helpful conditions.

#### *Description of Plate VIII.*

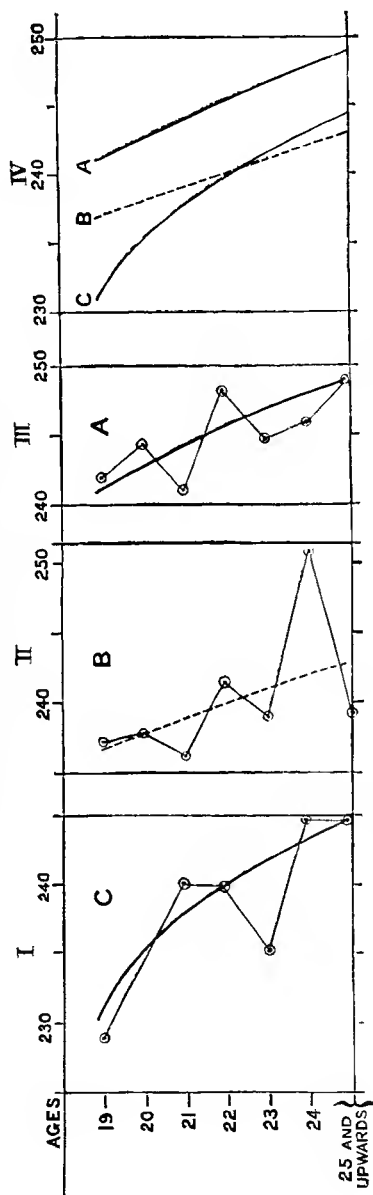
Diagrams illustrating the relative brain capacity of Cambridge University men, according to their proficiency and age.

#### DISCUSSION.

Mr. E. W. BRABROOK observed that the statistics of the B class at the age of twenty-four, showed a remarkable aberration, being in fact in excess of any other class at any age, no doubt due to the smallness of the number under observation. This led to the inquiry whether any individual cases of exceptionally large size were included in this particular group; and whether a curve struck upon the line of greatest frequency might not be more symmetrical. In any case, it was very satisfactory to observe that these investigations proved the physical advantage of high culture, and proved also that it was most valuable to those who entered upon it from the lowest plane. The thanks of the Institute were due to Dr. Venn and Mr. Galton for this important contribution to knowledge.

RELATIVE BRAIN CAPACITY OF CAMBRIDGE UNIVERSITY MEN ACCORDING TO THEIR PROFICIENCY AND AGE  
(FROM DR. VENN'S TABLES).

*The Numerals along the top of the diagrams signify the product of the three Head measures, viz. :—  
Length × Breadth × Height (in inches).*



A, High honour Men ; B, The remaining honour Men ; C, Poll Men.



The following paper was then read by the President :—

REMARKS *on* REPLIES *by* TEACHERS *to* QUESTIONS RESPECTING  
MENTAL FATIGUE.

By FRANCIS GALTON, F.R.S., President.

THE question of over fatigue of the brain in schools was discussed some months ago with much heat, and the arguments on either side were supported by experiences that so flatly contradicted each other, as to make it difficult to arrive at just conclusions. After the heat of discussion had somewhat cooled down, it happened that I was asked to occupy the chair at a meeting of the Educational Section of the Teachers' Guild, and while doing so I was much impressed by the eager and sustained attention of the large audience to the memoir read on that evening. It occurred to me that the Teachers' Guild might become a powerful instrument for the solution of statistical problems, if the interest of its intelligent members could be excited in inquiries bearing on Education, and if their good will and confidence could be gained. I determined to make a trial, and selected questions bearing on fatigue for the purpose. The Council of the Guild kindly assisted me by circulating my questions, together with a covering letter from their Vice-Chairman, Dr. Morse. The replies to those questions form the basis of the following remarks. Let me say at once, that I was somewhat disappointed in respect to the number and fullness of the replies—so much so, that I long hesitated to publish anything before supplementing them with other materials, to be gained gradually through my own observation, but having much else on hand, it seemed on the whole best to work off this matter at once, without admixture. I have 116 replies from teachers, many of large experience, concerning both themselves and their pupils, and as this is just sufficient to deserve a separate discussion, I shall not travel beyond the bounds of what may be called my brief, I will not enter upon other materials, and barely into the psycho-physics of fatigue, but shall merely set forward in an orderly way the statements contained in the 116 replies.

The objects of my questions were first to determine the signs and effects of incipient fatigue in as *measurable* a form as possible ; for it is obviously most desirable to know what the tests of fatigue should be, in consequence of the contradictory opinions above alluded to. There ought to be no room for doubt as to whether the pupils in a particular school or class, and at a particular time, were or were not over fatigued. Secondly, I wished to hear from the teachers whether they had themselves

ever broken down from over work, and what their own experiences might be concerning their pupils and friends. The actual questions are subjoined: numbers 1, 2, and 3 regard the person addressed; 4, 5, 6, regard their pupils and acquaintances.

1. What particular mental work can you perform easily, when your mind is fresh, that you find difficult or impossible when your mind is somewhat fatigued? 2. Has illness, due solely to mental overwork, independent of domestic anxiety and worry ever incapacitated you for more than a month at a time from ordinary school work? If so, give dates and symptoms. Do you consider your present health to be in any way affected by that illness? 3. Has experience discovered to you any warning signs, bodily or mental, distinct or obscure, of the imminent approach of mental fatigue, other than the growing sense of becoming fatigued? If so describe them. 4. What particular intellectual work do you find your pupils perform with ease when their minds are fresh, in which they fail more or less when they are mentally fatigued, even though they are still interested in their work? 5. Have you known cases of more or less serious prostration from mental overwork, as distinguished from the effects of domestic or other anxiety? If so, give initials and dates, and a very brief notice of the severity and duration of the illness? 6. Has experience discovered to you any warning signs of imminent mental fatigue among over zealous pupils?

The upshot of the replies to the questions is as follows:—

*General Aspect.*—Experienced teachers place most dependence on the general aspect of their classes, due to a variety of small indications, such as jaded expression and abnormal skin colour. They more especially speak of a strange look in the eye, which is variously described as dazed, weary, fixed, or lack lustre, as being a peculiarly characteristic indication that work should be slackened at once.

*Nervous Irregularities.*—Restlessness appears to be the commonest sign of partial fatigue: that is, of the attention being wearied while the muscles are craving to be employed. I may here for one moment break my plan of not travelling beyond my brief by alluding to a short account I wrote in "Nature" three years ago, Vol. xxxii, p. 174, but signed only with my initials, entitled "Measure of Fidget," describing how I had succeeded in counting the varying rate of fidget of a section of a large audience during the reading of a wearisome memoir. I have since frequently tried this method; it is an amusing way of passing an otherwise dull evening, but in drawing conclusions from the number of movements the average age of the audience and their habits of thought have to be taken into account. Children are extraordinary mobile, and those adults who are little accustomed

to concentrate their attention, are rarely still except when spell-bound by eloquence. On the other hand I have frequently noticed at meetings of the Royal Society, that as many of the persons present as I could hold in a glance, were all as rigid as statutory for many seconds together. Yawning and lolling are common among tired children, and twitchings and grimaces, which in serious cases culminate in St. Vitus' dance. Here are some extracts from the various replies.

1. Sudden muscular movements.
2. Grimaces, frowning, or compression of the lips are marked signs.
3. The fingers sometimes twitch and the whole nervous system seems affected.
4. Twitching of the face.
5. Twitching, blinking the eyes.
6. Fluttering of the eyelids.
7. Tendency to nervous laughter or movements. One correspondent has fits of sneezing in the early morning when he has been fatigued over night.

General unsteadiness of muscular co-ordination is shown by bad and shaky handwriting: this is sometimes specifically mentioned, but more often implied by such phrases as—8. Careless writing; or, 9. "Failure in all work requiring neatness." 10. Sometimes a loss of power to continue writing, the pen going crooked, &c. Fatigue is also very frequently indicated by disordered utterance as—11. Tendency to stumble over words when speaking. 12. Refusal of the tongue to obey the will, so that in speaking or reading I substitute one word for another.

Irregularity of nervous action is further shown by conditions of pallor or of flushings in the face. They sometimes alternate; testifying to a depression of general nerve power, combined with morbid excitability. Allusions to abnormal skin colour are frequent in the replies. One teacher goes so far as to lay particular stress on the colour of the tips of the ears in deciding whether and in what way the girls of her class are suffering. If the tips are white, flaccid, and drooping she concludes the girls are thoroughly weary in mind. If they are relaxed but purplish, she concludes that they are "tired not with study but from struggling with their nerves, which the average school girl of 14 or 15 very rarely has completely under control."

*Headaches.*—The frequent occurrence of headaches in varied forms and in every degree of severity may be accepted as a matter of course. Similarly as regards cold feet, faintness and actual faintings. Sleeplessness in a very serious degree is another well-known sign; much more rarely somnolence. Grinding the teeth at night and talking in the sleep are frequently mentioned; somnambulism occasionally so. I do not propose to enter into details respecting any of the matters just mentioned, as they are all of them well known signs of over fatigue. It may, however, perhaps interest the meeting to see

a drawing I hold in my hand made in sleep not many weeks ago, by a young friend and connection of my own, who was studying rather too hard for a Government examination. He awoke in the night, and found himself in his nightgown, sitting at his table with the gas burning and with this grotesque sketch of an elephant's head and of some other animals just completed. The ink was still wet. He had not the slightest recollection of anything previous to the act of awakening, but there had been conversation before he went to bed that probably suggested the sketch.

*Disposition.*—Irritability is perhaps the commonest sign of incipient fatigue. My correspondents freely acknowledge it to be so with themselves and it is very easily noticed among their pupils, who become cross and peevish when tired. I shall not enter further into this, as the fact is a familiar one; it is also well-known that the nerves of sensitive people becomes so irritable by overwork as to be painfully jarred by what they wholly disregard when well, such as the ticking of clocks and the rattle of the street. A most pitiable amount of suffering is disclosed in these replies, due to nervous irritability. Much is said of the gloomy way of looking at life, that is brought on by overwork; of the sense of incapacity, of magnifying trifles, and of dread of society. Irritability is sometimes accompanied by a notable amount of ordinary excitability expressed by such remarks as—1. I get nervous and start at noises. 2. I start sometimes at a sudden noise or movement in the room.

It is, I need hardly say, known by experiment, that both the quickness and the magnitude of the reaction to any stimulus is greatly affected by fatigue.

There is an experiment, not so well known as it should be, that after a class had practice in performing it, can be repeated at any time in a few seconds, which gives an excellent measure of the varying amount of reaction time. The class take hands all round, the teacher being included in the circle, a watch with a seconds hand lies on the table before him. All the pupils shut their eyes. When the seconds hand of the watch comes over a division the teacher gives a squeeze with his left hand to the right hand of the pupil next to him. That pupil forthwith with his left hand squeezes the right hand of the next pupil, and so on. Thus the squeeze travels round the class and is finally received by the right hand of the teacher, who then records the elapsed time since he started it; or he may let it make many circuits before he does so. This interval divided by the numbers of pupils in the class and by the number of circuits, gives the average reaction time of each pupil. The squeeze takes usually about a second of time to pass through

each dozen or fifteen persons. We should expect to find uniformity in successive experiments when the pupils are fresh; irregularity and prevalent delay when they are tired. I wish that teachers would often try this simple, amusing, and attractive experiment, and when they have assured themselves that their class enters into its performance with interest and curiosity, they might begin to make careful records at different periods of the day and see whether it admits of being used as a test of incipient fatigue. I should be exceedingly glad to receive accounts of their experiences. Deception must of course be guarded against.

*Senses.*—The frequency with which serious alteration in the power of hearing and of seeing is mentioned, and the feelings sometimes of intense sensitivity and sometimes of numbness, show that the delicacy of the senses is markedly affected by fatigue.

Hearing is often heightened in keenness, sometimes it is dulled. It is heightened in those numerous cases of irritability of which I have spoken, when the tired brain becomes almost maddened by an organ grinder. It is temporarily paralysed in others. The following is a mixed case:—1. My hearing had never been very acute, and I think the first symptom of fatigue is a feeling of deafness, but at the same time that I cannot hear the voices I want to hear, the outside noises of traffic, bells, &c., become intolerable. Other cases of deafness from fatigue are—2. Inability to hear in school without a painful effort. 3. Increased deafness.

Vision is greatly affected by over fatigue, not only owing to the strain upon the eyes from much reading in a bad light, but apparently through more deeply-seated causes as well. It is difficult otherwise to account for the following interesting case in which colour-blindness was brought on by fatigue and disappeared after rest. It has much physiological interest and well deserves being placed on record. The lady allows me to mention her name for the sake of authenticity. She is Miss J. Beckett, Girls' Grammar School, Ripon.

"After several hard hours of continuous study I have been subject to attacks of colour-blindness, which leave me after resting. The first time I noticed that I was not able to distinguish one colour from another, was when I was reading for the London Matriculation years ago. I was at the same time etching for an American magazine and teaching most of the day. This lasted from Christmas to July, when I began to feel considerably worn out. One day I went to spend a few hours with a friend, and whilst there, began to paint some ivy leaves on a terra-cotta plaque. Imagine my distress when my friend told

me the leaves were orange instead of green. On my return I went into my study and to my astonishment, the curtains which were blue in colour looked a kind of dingy yellow. However in a few hours I was quite well. Towards the end of the year I was obliged to give up work on account of my health. I got well, and took up my work again, still subject to temporary colour-blindness when tired." In answer to further inquiries, she adds: "I do not remember whether I have any difficulty in recalling colours when tired. From a little child I have been particularly fond of them, and can readily paint flowers, foliage, and neutral tints from memory."

The frequency and severity with which the sight is affected by fatigue is sufficiently shown by the following extracts:—

1. The eyes fail first. Sometimes after hurrying to a lesson, on my arrival I could not see a single note on the page of music for a few minutes. After writing and playing long, everything goes black or black spots dance up and down. 2. A time of great excitement or worry will so affect my sight that for about half-an-hour at a time, I can see nothing clearly. The outline of everything is deficient in some part, so that I only see half of a thing at a time. There seems to be a bright wheel of light whizzing in the corner of one or the other eye.

3. At first the lines of the page become indistinct, then at intervals they appear to vibrate; finally they merge into one mass.

4. The words appear to rise from the paper and frequently a double row of words are visible.

5. Lights and after images are distinct before my eye.

6. A confusion in the lettering of mathematical diagrams is sometimes an early symptom of fatigue among my pupils.

As regards sensations in the eye itself, beside such remarks as—7. A dazzling and burning sensation in the eye, the following is a case of an affection of the eye being subordinate to that of the brain, rather than *vice versa*.

8. A nervous sensation in the eyes as though the eyeballs were loose in my head, and would fall which ever way the head is inclined. The sensation is worse on lying down. I am somewhat short-sighted and wear glasses, but only feel this disagreeable sensation when mentally weary, not necessarily through over-reading.

*Memory*.—A very common and early symptom of fatigue is failure of memory, using that word in the allied senses of recalling ideas at will, or else of former ideas presenting themselves readily by association, or else of the sure association of muscular movements engaged in utterance, with the idea of the words intended to be uttered. I have made extracts of no less

than twenty-five cases of failure of memory, out of which I will select half-a-dozen.

1. My first indication of mental failure is an inability to spell common words; my second, an omission of words in writing; my third, sudden forgetfulness of what I am actually saying. 2. Tendency to forget the meaning of words in a foreign language which are usually well known or have been met with quite recently. Tendency to make stupid blunders in subjects in which, when the mind is in full vigour, it is accurate without effort. Simple and obvious mistakes are increased twofold in number, and that throughout the class. 3. Through days and weeks together, the utterance of wrong words or sentences, not intended or desired to be spoken, and the writing of wrong words. 4. Tendency to stumble over words in speaking, and to misplace letters in writing, generally putting them too soon as "Wesday" for "Wednesday." 5. Want of power of calling at will to memory, names and little matters connected with every day life. 6. Some of the pupils never spell correctly when tired.

*Arithmetic and Mathematics.*—The studies that are the first to fail under fatigue differ in different individuals, but in the majority of cases those of arithmetic and elementary mathematics go soonest. Though many of the 116 replies come from teachers who have little, if anything, to do with those subjects, no less than forty-seven specifically mention them. For example:—

1. The merely mechanical processes of arithmetic become bewildering at the end of a day in which I have been particularly engrossed with school work.

2. Arithmetic and algebra become impossible when fatigued not as being disagreeable or painful, but because I then blunder so much that it is hardly any use attempting them.

3. Another correspondent speaks of the impossibility when fatigued of doing work that requires both accuracy of detail and a certain force of will to fix the attention, such as arithmetic.

4. Speaks of the difficulty to tired boys of working out any *common sense* problem in arithmetic.

Though very many similar answers could be quoted in corroboration of these, there are two that tell in an opposite direction. They are—

5. Whenever my mind is wearied, it affords me a certain amount of relief to do some work which involves the solving of arithmetical and algebraical problems, and by preference such as call for the use of logarithms or of the slide rule.

6. I find accounts a great rest when I cannot exert my mind usefully in any other way.

I may be permitted again to break my rule by adding a case

from my own knowledge of a very distinguished man, now deceased, who having always found repose in his favourite mathematics when he was fagged and worried by multifarious duties, naively recommended the same remedy to a friend whose brain had so broken down for a time, that he shrank from the least mental exertion as from a fatal danger.

*Languages.*—A difficulty in translating is another of the noticeable effects of incipient fatigue, and is partly due to the lapses of memory already spoken of.

1. In translating, words and phrases do not occur readily to the mind.

2. Translation into or out of a foreign language with which I am not very familiar.

3. I have occasionally lost the power of speaking German when fatigued, though when in my ordinary condition I speak it without conscious effort.

The failure to translate *well* is due of course to much more than the simple failure of memory in small things and depends on the loss of power of grasp, and on depressed mental vigour generally. The following is an instructive case:—

When I taught young boys of ages 8 to 13, all day, I took arithmetic and Latin in the morning, and English reading, geography, &c., in the afternoon. On some occasions the Latin lesson got put off till the afternoon, and I was surprised to find that lesson, which was always a successful one in the morning, failed entirely in the afternoon. The boys wished to learn but could not. Their ordinary work, which made less demand on the intellect, they did in the afternoon well enough.

This and such like cases fall more properly in the next division.

*Failure of Mental Grasp.*—The evidences that the fatigued mind is unable to work up to its normal standard, and that it wastes itself in futile exertion, are very numerous. They are such as:—

1. Failure of ability to grasp the meaning of even simple things.

2. Failure of the *portative* memory. In reading complete inability to take in the matter whilst mechanically scanning the page. A curious incapacity to count the cups when serving tea.

3. Reading sentences without recognition of what was read.

4. Confusion alternating with excessive clearness of thought.

5. Tendency of thoughts to wander. Failure in pupils to grasp the meaning of what is said to them quickly and fully.

6. Before the actual sense of fatigue is distinctly felt, I am conscious of a want of power to grasp ideas, and of an incapacity for conveying them clearly.

7. Inability to read the "Journal of Education."

8. Rapid disappearance of immediately preceding concepts, and hence difficulty in establishing connections between paragraphs, as in writing a Review article.

9. Tendency to use long words. (This strikes me as a very suggestive reply).

10. Any book in which the language is wanting in ease and simplicity, though its subject may be familiar or easily understood.

In short, to use a common and vigorous phrase, the mind ceases to *bite*, when it is fatigued.

*Failure of Energy.*—It requires no evidence to corroborate the well known fact that energy fails as fatigue increases. New subjects are distasteful; teaching dullards becomes almost an impossibility. Sustained effort, vigorous inspection, quick decision—all are impossible.

*Possibility of Tests of Incipient Fatigue.*—The replies I have received do not contain any distinct proposition of tests of incipient mental fatigue, and I am myself far too ignorant of the practice of education to venture to formulate any. On the other hand, the replies are not deficient in indications of what such tests might be directed to ascertain. They are principally as follows:—

1. The length of time during which neatness of execution can be sustained in performing a prolonged task.

2. Promptness and sureness of memory in simple things.

3. Common sense arithmetical problems.

4. Reaction time.

The measure of fatigue is inversely the measure of endurance, and this strikes me as being a faculty that well deserves investigation. Under the strain and exhausting calls of modern civilized life, the power of endurance is rising continually in importance. Men and women have now a-days to act rapidly and for many hours, and not only to act exceptionally well. It therefore seems very reasonable that teachers should direct their attention to some fair way of appraising the relative power of endurance among their pupils. It is of course incidentally discovered in the ordinary course of tuition, but one would like to see appropriate tests directly applied to determine it, and such as would show at any time in a definite and unmistakeable manner whether the minds of pupils were fagged or not.

*Breaking Down.*—I now come to the evidence given in these replies respecting the frequency with which both pupils and teachers are found to "break down." There is an intelligible and very transparent tendency in not a few of the respondents to say

that such a thing as overwork is impossible in their respective schools. Some of them protest so much and so extravagantly as to raise not a little suspicion. There are even a few who say they have never heard of a case of breaking down.

Taking all the replies together, I find that out of my 116 correspondents no less than 23 of them have at some period of their lives broken down, and that 21 of these have never wholly recovered the effects. There are six other cases of a less serious kind, some of them slight. In other words one out of five teachers has, so far as the evidence before me goes, been severely stricken. As to the cases well known to my correspondents, there is vagueness in some of the replies where the word "several," and the like, are used, to which I am quite unable to assign a numerical value, but 59 sad cases are specified in detail in answer to the question 5: "Have you known cases of more or less serious prostration from mental overwork, as distinguished from the effects of domestic or other anxiety? If so, give initials and dates, and a very brief notice of the severity and duration of the illness."

In many other cases the writers express the difficulty they feel in distinguishing between worry and overwork. The latter is a consequence of the former, while the former often results from the gloom, anxiety, and sense of incapacity caused by the latter. It is a self-regenerating circle of evil.

I draw two conclusions from the replies. The first is that the reason why mental fatigue leaves effects that are so much more serious than those of bodily fatigue is largely owing to the cause just mentioned. When a man is fatigued in body he has very similar symptoms to many of those mentioned above, but there is a great after-difference. As soon as the bodily exertion has closed for the day, the man lies down and his muscles have rest; but when the mentally fatigued man lies down, his enemy continues to harass him during his weary hours of sleeplessness. He cannot quiet his thoughts and he wastes himself in a futile way.

The other conclusion is that breaks down usually occur amongst those who work by themselves, and not among pupils whose teachers keep a reasonable oversight. Over-zealous pupils are rare, as many of my correspondents insist. But the danger is not so much at school, when the hours of study and those of play and exercise are fixed, as it is at the age when young persons are qualifying themselves for the profession of a teacher, and who have also to support themselves, and perhaps to endure domestic trials at the same time. Dull persons protect their own health of brain by refusing to overwork. It is among those who are zealous and eager, who have high aims

and ideas, who know themselves to be mentally gifted, and are too generous to think much of their own health, that the most frequent victims of overwork are chiefly found.

#### DISCUSSION.

Mr. J. G. FITCH, Her Majesty's Inspector of Training Colleges, remarked that the returns collected with so much care by Mr. Galton were very interesting and suggestive, and might, if extended over a wider area, prove very useful. Meanwhile it should be remembered that their trustworthiness and value depended, in some measure, upon conditions which had not been referred to in the paper, and on which no information was before the meeting. In judging of the signs of incipient weariness or over-work in a class, the one consideration of most importance as a factor in the problem was the character of the teacher and of his lesson. A bright earnest teacher, who knew how to kindle the interest and sympathy of his scholars, would observe few or no tokens of fatigue, while a dull, spiritless and mechanical teacher might find his pupils restless or yawning before he had been five minutes in their presence. If there were two teachers, the one of whom was gifted with real aptitude and power and knowledge of method, and the other of whom was deficient in these qualifications, both might be at work in classes of the same number, the same age, and the same capacity, and might be teaching the same subject; yet their reports in answer to Mr. Galton's questions would differ substantially: for they would not only observe in a different spirit, but they would have very different phenomena to observe. Unless we know something of the character and capacity of the teachers, it would be unsafe to deduce any general inferences from their testimony on the mental fatigue of their scholars. Another condition very materially affecting the whole problem was the character of the time-table in use in the school. If the subjects of instruction were wisely distributed; if the lessons were not of undue length; if the various occupations of the day were so varied that light mechanical exercises alternated with lessons which required serious mental application, there need be little or none of the irritability or the languor so often complained of. Whether school-work was wearisome and hurtful or not depended not so much on its amount as upon the skill and good sense with which the work was planned, and with which the different mental and bodily faculties were called into exercise in turn. He did not say this to detract from the value of the very interesting enquiries which had been described in Mr. Galton's memoir, but merely to suggest caution in deducing inferences from the answers unless more was known about two of the most prominent and significant of the conditions of school-life—the quality of the teaching and the distribution of the employments.

Mr. STRAKER, following the suggestion of the previous speaker,

that the number of subjects probably influenced the amount of mental fatigue, said that he had worked at three subjects, taking them in turns, for two years, and that he was unable to do any work for about a year afterwards, from the resulting mental fatigue. The work was almost continuous; the subjects were absolutely unconnected with each other; two of them required much thought, one of the two a good deal of writing; the other was ordinary preparation for an examination, and was the easiest of the three, though taking about an equal amount of time. As to the amount of work, any two of the subjects would have been full ordinary employment. Therefore intervals of time which would have been occupied in relaxation were devoted to work.

He had previously suffered from mental fatigue, for a few weeks after his first examination at Cambridge, which he had prepared for in a very short time; also for many months after his Tripos, in which he took a low place in honours.

MAY 29TH, 1888.

FRANCIS GALTON, Esq., F.R.S., *President, in the Chair.*

The minutes of the last meeting were read and signed.

The election of W. GREATHEED, Esq., of 174, Euston Road, was announced.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From CHARLES HOLLAND WARNE, Esq.—Ancient Dorset. By Charles Warne, F.S.A.

From the INDIA OFFICE.—The Customary Law of the Rawalpindi District. Drawn up by Frederick A. Robertson, C.S.

From the INDUSTRIAL EDUCATION ASSOCIATION.—Physical and Industrial Training of Criminals. By Hamilton D. Wey, M.D.

From the AUTHOR.—*Lingua: an International Language for purposes of Commerce and Science.* By George J. Henderson.

— *The Prayer of a Navajo Shaman.* By Dr. Washington Matthews, U.S. Army.

— *Le Tibia dans la Race de Néanderthal.* Par Julien Fraipont.

From the DIRECTOR-GENERAL, GUATEMALA.—*Informe de la Direccion General de Estadistica, 1887.*

From the SMITHSONIAN INSTITUTION.—*Smithsonian Miscellaneous Collections.* Vol. xxxi.

- From the BERLIN GESELLSCHAFT FÜR ANTHROPOLOGIE, ETHNOLOGIE, UND URGESCHICHTE.—*Zeitschrift für Ethnologie.* 1886, Heft vi. 1888, Heft i.
- From the ESSEX FIELD CLUB.—*The Essex Naturalist.* Vol. ii. No. 4. April, 1888.
- From the ROYAL SCOTTISH GEOGRAPHICAL SOCIETY.—*The Scottish Geographical Magazine.* Vol. iv. No. 5. May, 1888.
- From the ROYAL ARCHEOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND.—*The Archaeological Journal.* No. 177.
- From the BATAVIAASCH GENOOTSCHAP VAN KUNSTEN EN WETENSCHAPPEN.—*Notulen van de Algemeene en Bestuurs-Vergaderingen.* Deel. xxv. Aflevering 4.
- *Dagh-Register gehonden int Casteel Batavia vant passerende daer ter plaetse als over geheel Nederlandts-India.* Anno 1653. Van Mr. J. A. Van der Chijs.
- From the KONINKLIJK ZOÖLOGISCH GENOOTSCHAP "NATURA ARTIS MAGISTRA."—*Gids voor den bezoeker van het Ethnographisch Museum.* Door C. M. Pleyte. Insulinde I, Java. Insulinde II, Buiten Bezittingen, Australië, en Oceanie.
- From the ACADEMY.—*Boletin de la Academia Nacional de Ciencias en Cordoba (República Argentina).* Tomo x. Entrega 1<sup>a</sup>.
- From the ASSOCIATION.—*Proceedings of the Geologists' Association.* Vol. x. Nos. 5 and 6.
- *Journal of the East India Association.* Vol. xx. No. 2.
- From the CLUB.—*Proceedings of the Berwickshire Naturalists' Club.* Vol. xi. No. 2.
- From the INSTITUTE.—*Proceedings of the Canadian Institute.* Vol. v. Fas. 2. No. 149. Annual Report, 1887.
- From the SOCIETY.—*Proceedings of the Royal Society.* Nos. 264-266.
- *Journal of the Society of Arts.* Nos. 1849-1853.
- *Proceedings of the Society of Biblical Archaeology.* Vol. x. Part 6.
- *Proceedings of the Royal Geographical Society.* Vol. x. No. 5. May, 1888.
- *Proceedings of the Society of Antiquaries of Scotland.* Vol. xxi.
- *Bulletins de la Société d'Anthropologie de Paris.* Tome x. Fas. 4. Mémoires. Tome iii. Fas. 3, 4.
- *Boletim da Sociedade de Geographia de Lisboa.* 7<sup>a</sup> Serie. No. 5, 6.
- *Mittheilungen der Anthropologischen Gesellschaft in Wien.* xviii Band. Heft 1.
- From the EDITOR.—*Nature.* Nos. 965-969.
- *Science.* Nos. 271-275.
- *Photographic Times.* Nos. 344-348.
- *Revue d'Anthropologie.* Tom. iii. No. 3.
- *Revue Scientifique.* Tom. xli. Nos. 17-21.
- *Matériaux pour l'histoire primitive et naturelle de l'homme.* 1887, Septembre-Décembre.

The following papers were read by the Secretary and illustrated by a series of rubbings from the stones :—

*On an INSCRIBED ROCK SURFACE at MEVAGH, ROSGUILLE, COUNTY DONEGAL, IRELAND.*

By G. HENRY KINAHAN, M.R.I.A., &c.

[WITH PLATE IX.]

THIS locality is near the old coast guard station at Mevagh, in Rosguile, hard by the north-west shore of Mulvay Bay.

Mevagh gives a name not only to the townland, but also to the parish, which seems to have been once a place of some note, containing an ancient church, graveyard, and cross, and the ruins of one or two cahers of the Donegal type (small diameter and very high walls), and various megalithic and other ancient habitations.

Near the scribed rock surface is "Crannog point." There is now no trace of a lake dwelling there; but possibly its site was off the point in the shoal portion of the bay. But as the term crannog is also applied to stepping stones in water, it may here have only been applied to a rude boat pier.

The scribed rock surface lies between the hamlet and the shore of the bay, and is an ice-planed wide felstone dyke, the markings generally occurring on a space about 60 feet long and from 15 to 20 feet wide. They occur more or less in groups, but some are scattered about, while elsewhere on the rock surface a few were detected, but so effaced as to be nearly imperceptible. They were first brought under my notice by my colleague, S. Bedoe Wilkinson.

The surface is very much weathered, especially on the flat portions, and in places it is more or less overgrown with a thin coat of peat or lichens, which had to be removed, and the surface washed, before the rubbings were taken.

No. 1 is the best preserved group (Pl. IX, fig. 1); it occurs on a slope to the south-east, which has been used as a slide by the children: this has given it a polish and preserved the marks from weathering. Here, as elsewhere, the more common figures are combinations of cups, circles, and furrows. In general at the centre of the figure there is a cup, but in a few there is a knob instead, and in two remarkable crosses. The scribe above the rest is unique, not having been found elsewhere, while a similar scribe to that to the right hand lower corner also occurs in the group rubbing No. 2. Two or three crosses occur in the group rubbing No. 5.

No. 2 is on the same surface as No. 1, but a little lower down

to the south-east. On this surface, as on No. 1, there is an open circle, with arms from it, while in one of the systems of circles there is a furrow running eastward across the surface, and not downward as is usual.

No. 3 is a system of large dimensions immediately south of the east portion of No. 2.

No. 4 is an isolated group some distance south-west of No. 1. All the scribes are of small dimensions, but among them is a peculiar Latin cross with a cup at the north end of the longest furrow. As can be seen from the rubbing, this surface is greatly weathered (Pl. IX, fig. 2).

No. 5 has besides elaborate combinations of circles and furrows, two or three crosses of the same character as those on No. 1. One of these crosses is well preserved, while the others are too much weathered to be satisfactorily made out.

The crosses on Nos. 1 and 5 are very interesting, as a similar cross found in the County Kerry on a slab by Dr. Graves, Bishop of Limerick, led him to believe the inscription was post-Christian. They, however, being found here would lead to the supposition that they were pre-Christian crosses.

A cross of the same type as the Latin cross, rubbing No. 4, occurs also on one of the Barnesbeg standing stones, some miles to the south in the country between Cresslough and Kilmaerenan. That they are pre-Christian seems to be suggested, as more or less similar ones have been observed on prehistoric implements, especially on two stone hatchets found by the late George O'Farthie under twelve or more spits of peat in his bog to the south of Oughterard, County Galway, and now in the collection of the Royal Irish Academy.

The cups on the Giant's Rock, Trimragh, represent the cups so often found in the County Donegal. Invariably one cup is so shallow as to be scarcely perceptible and the stones are called the "Giant's push stones," the six cups being supposed to be the marks of his fingers. I have got various numbers of cups—generally six or seven, sometimes more or less, but never five—usually on loose blocks, but in three or four places on the rock surface.

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#### BARNES' INSCRIBED DALLÁNS, COUNTY DONEGAL.

By G. H. KINAHAN, M.R.I.A.

DALLÁNS are very numerous in this county: usually they are plain, a few having crosses on them or a few cups, but in the parish of Muff, near Londonderry, there is a more elaborate one described and figured in the "Proc. Roy. Hist. and Arch. Ass.,

Ireland," while a second is the King's Stone, Glendoen, west of Letterkenny, figured and described in the "Proceedings of the Royal Irish Academy."

Those to which attention is now directed occur north-west of Kilmacrenan, about a mile east of the south end of Barnesbeg (*Anglice*, little gap).

This seems anciently to have been a place of some note, as in the neighbourhood are the ruins of megalithic structures, such as Luscas (cave dwellings); Foslacs, or dwellings made of large flags or slabs; a so-called cromleac, having on the cover stone cups similar to those on a dolmen figured by Du Chaillu in the "Land of the Midnight Sun"; a cupped rock surface; the site of a Termon, or city of refuge, &c.

The large Barnes dallán stands a little to the southward of the smaller one; it is a massive flag seven feet high above the present surface, and about seven feet wide. The eastern face is extensively sculptured, principally cups, but in some places cups in saucers combined with furrows, as shown in rubbing No. 2 (Pl. IX, figs. 3 and 4).

At the left hand lower corner, half being below the present surface of the ground, is a curious combination of circles, furrows, and cup, of which No. 1 is a rubbing (Pl. IX, fig. 5).

Rubbing No. 3 is of the cups on the eastern face of the lesser dallán.

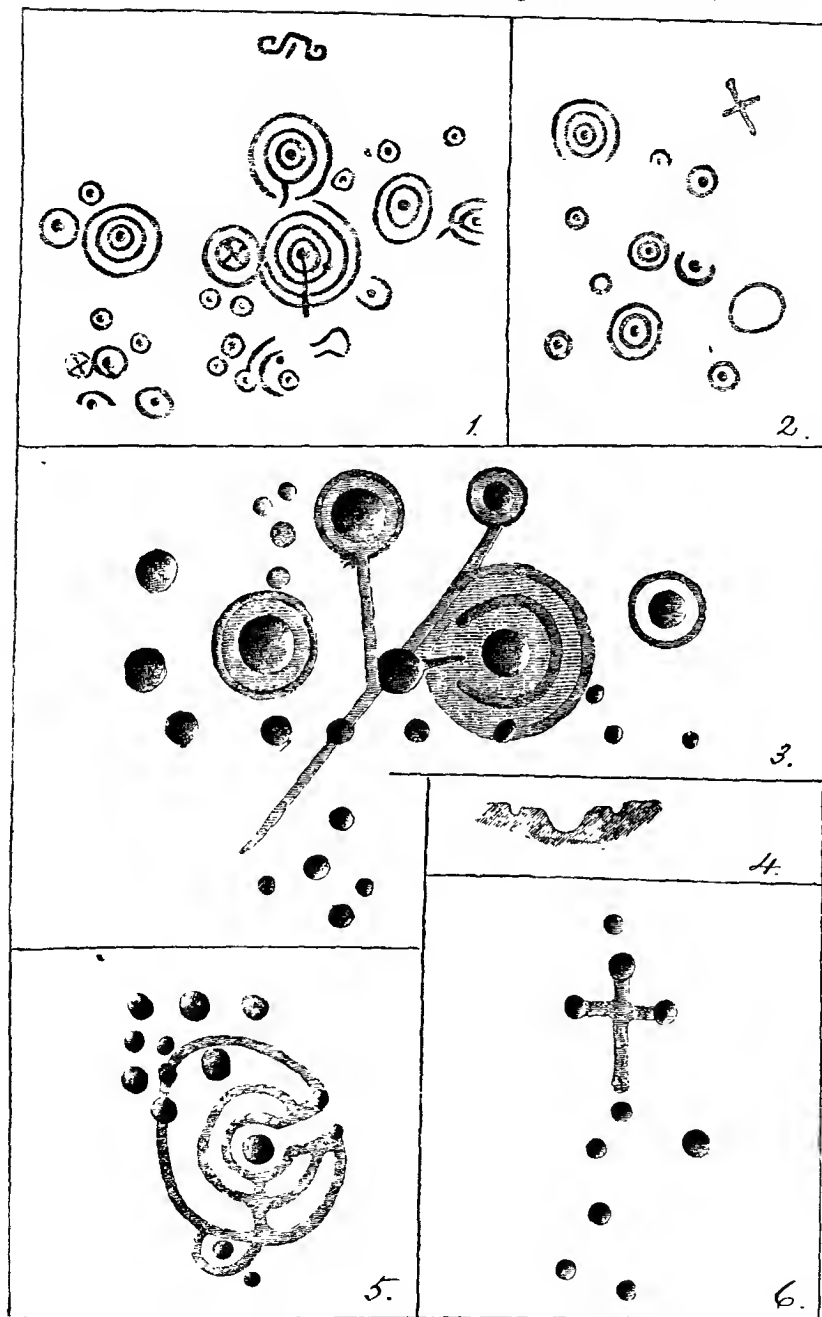
Rubbing No. 4 shows the marking on the western face of the lesser stone (Pl. IX, fig. 6); while No. 5 is a sketch of the lesser stone looking eastward, showing its full size above the original surface.

The smaller dallán seems to have been intentionally made and bevelled after the model of a spear head. This possibly may suggest that it was intended to represent a war god, or some such.

The cross on the western surface may possibly be more recent than the cups; it is, however, more or less of the same type as the Latin cross on No. 4 of the Mevagh rubbings. This cross, in miniature, has been faintly copied by some modern scribe on the western face of the large dallán, but the "old men" only cut two small cups on it.

#### *Description of Plate IX.*

- Fig. 1. Inscribed rock surface at Mevagh, County Donegal, Ireland; showing groups of cups, circles, furrows, crosses, &c.
- Fig. 2. Group of inscribed figures from rock surface at Mevagh, shewing a Latin cross.
- Fig. 3. Inscribed figures from a large dallán, near Barnesbeg, County Donegal, showing cups, saucers, and furrows.



INSCRIPTIONS ON ROCK-SURFACES IN COUNTY DONEGAL, IRELAND.



- Fig. 4. Transverse section of cup and saucer cut on the dallán.  
Fig. 5. Group of circles, furrows, and cup, from the large dallán.  
Fig. 6. Cross and cups on the small Barnes' dallán.

#### DISCUSSION.

MR. GEORGE M. ATKINSON observed it was difficult from a rubbing to judge of the construction of the marks, whether cut, rubbed, or picked out of the surface of the rock. The weathering on the forms also may determine something. There can be no doubt as to these marks being the result of design, but no satisfactory explanation has yet been offered of their intention. It seems strange to find cup marks and rings on a vertical surface of a rock. The cross in some of the circles does not prove them Christian. Many monuments, as the Ogham stones, are so inscribed. The groove or channel from the centre cup always points down the slope of the rock, no matter what the number of the concentric ring marks may be. It is possible that they represent in a rude form, something analogous to the forms of the Indian Linga.

MR. A. L. LEWIS thought the large cross represented in fig. 6, Pl. IX, had been made to connect the cup-markings at some unknown interval of time after the latter were formed. The other crosses in the rubbings were of a different character, but he saw no reason to suppose that they were of Christian origin.

MISS BUCKLAND pointed out that almost all the forms on the diagrams were to be found among the ancient American relics, the cross, in various forms, appearing constantly in American sculpturings on rocks and shells, evidently more ancient than the Spanish conquest, and, therefore, pre-Christian. Cup markings and concentric circles are also common on rocks and boulders in various parts of America, and although doubtless both there and in the old world these crosses and cup and ring markings had a symbolical and probably sacred meaning, yet the theory that when found in conjunction with other figures, as is frequently the case, they represent tribal or historic records seems worthy of consideration. An article on this subject in the "Smithsonian Contributions to North American Ethnology," Vol. V, 1882, brings together and compares these various markings from all parts of the world; and it will be seen that the cup and ring markings occur both in America and in Sweden, in connection with other figures evidently representing some historic event; and the same is brought out forcibly in some of the illustrations of Colonel Garriek Mallory's paper on "Pictographs of the North American Indians," in the "Annual Report of the Bureau of Ethnology," 1882-3.

MR. G. H. KINAHAN, in a written reply, has pointed out that the crosses on some at least of the Irish Oghams are more modern than the inscriptions—also that many Oghams are post-Christian. The "mark" mentioned in "The Book" was probably a cross, and that

it was an ancient Irish mark is proved by the cross on the Oughterard hatchet. In one system rubbing No. 2, Mevagh, and in two on No. 5, there are nearly horizontal furrows; in the latter, however, there are also vertical furrows. The knobs in place of cups in the centre of some of the systems would suggest that the scribing was done with a punch. The majority of the pre-historic structures in Northern Donegal are very similar to those of the Lapps; also the scribes are more or less similar to those in Northern Europe and America; while Donegal, when inhabited by the inscribers, must have had a climate very similar to that of the St. Lawrence of the present day; it may therefore be suggested that the early inhabitants were more or less like the Lapps and the Esquimaux and non-Christian.

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*On the INHABITANTS of PARAGUAY.*

By DR. STEWART.<sup>1</sup>

DR. STEWART said it was very nearly thirty-two years since he left London for Paraguay, and he then travelled through it without any intention of remaining there; he had a good opportunity of noticing the state of the country and the character of the people and he found them most remarkable as a nation.

Paraguay was the first country on the River Plate settled by the Spaniards, who were at first met with hostility by the Indians, but who soon became friendly with the principal Caziques in the neighbourhood. The chief tribes were the Guaranis, who extended from the mouth of the River Plate to the River Amazon; not round the coast of the Atlantic, but straight across the South American continent, as was clearly to be seen from the names of places, and there were traces of them in Brazil also. The modern Guaraní language differed from that which had been written by the Jesuit fathers, but which no Guaraní of to-day could read. When the speaker first landed in Paraguay he found a state of things existing which seemed less like the civilisation of the 19th than of the 16th or 17th century. The Jesuits were driven out of the country about a century ago, but some of their work might be seen still; but he had never been able to find the fine churches and cathedrals which were spoken of in some books of travels; he had, indeed, been in many of the churches, but had found no pretension to fine art whatever in them. After the Jesuits left, there was no progress or change

<sup>1</sup> This was a verbal communication, of which the speaker left no record in the hands of the officers of the Institute. The present abstract of the remarks has been obligingly furnished by Mr. A. L. Lewis, who took notes of Dr. Stewart's address.

till after 1811, when the last Spanish Governor was deposed, which was done without any violence. Other men then came to the front, amongst them Dr. Francia, a most extraordinary man, who was educated at Cordova for the legal profession, and who exercised a most awful tyranny over the country for about thirty years; he imprisoned all the respectable people, especially the Spaniards, and when he could get no more money from them he had some of them brought out occasionally to the public square and shot. Of course the character of the people was affected by these proceedings, and one result was that they never ventured to express any opinion on political matters until after 1870, when the last of the Lopez residents was killed. The first Lopez succeeded Francia in 1840; he was a lawyer of rather mean origin, but he remained President until his death in 1862, when his eldest son succeeded him. These Presidents only encouraged foreigners and trade so far as they considered it necessary; Lopez preferred Englishmen to other foreigners, and induced the speaker (Dr. Stewart), to remain in the country to form a school of medicine; he was not so successful as he might have been, on account of the war which followed; he had about 160 students, nearly all of whom were killed in the war, together with some of the English doctors. The population before the war was 1,200,000, but afterwards it was under 200,000; at the beginning of the war from 25,000 to 30,000 men would be engaged, but there were many drawn battles from which less than a third of the combatants returned. The soldiers lived very poorly, went almost naked, and underwent a very severe discipline, life being forfeited for what might be considered merely thoughtless actions. This arbitrary government, to which nothing was sacred, continued till 1870, when peace was restored, the country having been completely destroyed; there were no horses, cattle, fowls, cats, dogs, or anything left; everything had to be brought into the country afresh, the people who were left living meanwhile on fruits which they found in the woods, palms, oranges, &c., and continuing to die off from the effects of their long sustained misery and hardships. Since that time the country had been gradually recovering, and since 1880 the progress made has been remarkable.

The natives are quiet, hospitable, and inoffensive, and glad to see foreigners settling in the country; they are religious, truthful, honest, and grateful for anything that is done for them, and though they are said to be immoral, Dr. Stewart did not think they were so. The laws are good, and all codified, and there is complete liberty of conscience and perfect equality.

There are no full-blooded Guaranis to be found in Paraguay proper, all the natives having Spanish blood in their veins; but

Chaco, which is on the other side of the river, is populated by various tribes of Indians still untamed, and speaking different languages; D'Aubigné says they are all one nation, but Dr. Stewart found great differences in their skin colour, shape of head, position of eyes, and physiognomy generally, as well as in intelligence and language. This country has hardly been traversed by Europeans; eight years ago a Bolivian column crossed it into Paraguay, and from the calculations they made the population of the Grand Chaco must be between two and three millions.

Many of the people preserve purely Castilian features; the mixed races are a fine set of men, not as a rule tall, but rather under the average height, 5 feet 3 inches to 5 feet 5 inches being their average. They are very muscular and active, and just as much at home in the water as on the dry land.

No ancient buildings, such as are found in Central America, are known in Paraguay.

Several tribes of Indians are to be found in Paraguay, but they are not very numerous, and do not care to live among civilised people.

#### DISCUSSION.

Dr. SUMMERHAYES said that he had listened with much enjoyment to Dr. Stewart's interesting historical sketch of Paraguay, and of the natives of that isolated region, about which very little was known in England, but he considered that the statement made with regard to the security of life and property in Paraguay as compared with the neighbouring countries, was not altogether justified by the facts, inasmuch as, according to his experience, there was no more peaceable, orderly, and law-abiding country in the world than Brazil, where, in spite of the absence of a regular police, there was almost total immunity from serious crime in all the settled districts. He was, however, glad to be able to bear testimony to the essentially harmless character of the Indian tribes, where they were not systematically hunted down. The Guaranis, who formed the basis or chief stratum of the native population in Southern Brazil and in Paraguay, were only the southern branch of a much more widely spread Indian stock, the *Tupi* (or *Tupinamba*) race, as they were self-named. The word *Guarani* meant warrior, though the representatives of this race encountered by the original European settlers were the most peaceful of all the American races, there is no doubt but that other branches of the same family tree were among the most ferocious and most cannibalistic of all savage races. After the extraordinary depopulation of Paraguay during the war twenty-five years ago, principally through disease and famine, there must have been some amount of immigration of neighbouring tribes, but apparently there was little, if any, amount of negro intermixture in the present population as in Brazil.

## ANTHROPOLOGICAL MISCELLANEA.

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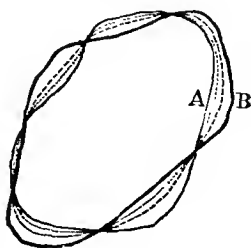
### PERSONAL IDENTIFICATION *and* DESCRIPTION.

By FRANCIS GALTON, F.R.S.

Being the substance of a lecture delivered at the Royal Institution on Friday, May 25th, 1888; reprinted from "Nature" of June 21st and 28th, after some slight revision by the Author.<sup>1</sup>

It is strange that we should not have acquired more power of describing form and personal features than we actually possess. For my own part I have frequently chafed under the sense of inability to verbally explain hereditary resemblances and types of features, and to describe irregular outlines of many different kinds, which I will not now particularise. At last I tried to relieve myself as far as might be from this embarrassment, and took considerable trouble, and made many experiments. The net result is that while there appear to be many ways of approximately effecting what is wanted, it is difficult as yet to select the best of them with enough assurance to justify a plunge into a rather serious undertaking. According to the French proverb, the better has thus far proved an enemy to the passably good, so I cannot go much into detail at present, but will chiefly dwell on general principles.

Fig. 1.



*Measure of Resemblance.*—We recognise different degrees of likeness and unlikeness, though I am not aware that attempts have as yet been made to measure them. This can be done if we take for our unit the *least discernible difference*. The application of this principle to irregular contours is particularly easy. Fig. 1 shows two such contours, A and B, which might be meteorological, geographical, or anything else. They are drawn with firm lines, but of different strengths for the sake of distinction. They contain the same area, and are so superimposed as to lie as fairly one over the other as may be. Now draw a broken contour which we will call C, equally sub-dividing the intervals between A and B; then C will

<sup>1</sup> The Council is indebted to the Editor of "Nature" for the woodcuts illustrating this lecture.

be more like A than B was. Again draw a dotted contour, D, equally subdividing the intervals between C and A; the likeness of D to A will be again closer. Continue to act on the same principle until a stage is reached when the contour last drawn is undistinguishable from A. Suppose it to be the fourth stage; then as  $2^4 = 16$ , there are sixteen grades of least-discernible differences between A and B. If one of the contours differs greatly in a single or few respects from the other, reservation may be made of those peculiarities. Thus, if A has a deep notch in its lower right-hand border, we might either state that fact, and say that in other respects it differed from B by only sixteen grades of unlikeness, or we might make no reservation, and continue subdividing until all trace of the notch was smoothed away. It is purely a matter of convenience which course should be adopted in any given case. The measurement of resemblance by units of least-discernible differences is applicable to shades, colours, sounds, tastes, and to sense-indications generally. There is no such thing as infinite unlikeness, because the number of just discernible differences between any objects, however dissimilar, is always finite. A point as perceived by the sense of sight is not a mathematical point, but an object so small that its shape ceases to be discernible. Mathematically, it requires an infinitude of points to make a short line; sensibly, it requires a finite and not a large number of what the vision reckons as points, to do so. If from thirty to forty points were dotted in a row across the disk of the moon, they would appear to the naked eyes of most persons as a continuous line.

*Description within Specified Limits.*—It is impossible to verbally define an irregular contour with such precision that a drawing made from the description shall be undistinguishable from the original, but we may be content with a lower achievement. Much would be gained if we could refer to a standard collection of contours drawn with double lines, and say that the contour in question falls between the double lines of the contour catalogued as number so-and-so. This would at least tell us that none of the very many contours that fell outside the specified limits could be the one to which the description applied. It is an approximate and a negative method of identification. Suppose the contour to be a profile, and for simplicity's sake let us suppose it to be only the portion of a profile that lies below the notch that separates the brow from the nose, and extending only so far downwards as the parting between the lips. Suppose it also to be the mere outline of a shadow sharply cast upon the wall by a single source of light, such as is excellently seen when a person stands sideways between the electric lantern and the screen in a lecture-room. All human profiles of this kind, when they have been reduced to a uniform vertical scale, fall within a small space. I have taken those given by Lavater, which are in many cases of extreme shapes, and have added others of English faces, and find that they all fall within the space shown in Fig. 2. The outer and inner limits of the space are, of course, not the profiles of any real faces, but the limits of many profiles, some of which

are exceptional at one point, and others at another. We can classify the great majority of profiles so that each of them shall be included between the double borders of one, two, or some small number of standard portraits, such as Fig. 3. I am as yet unprepared to say how near together the double borders of such standard portraits should be drawn; in other words, what is the smallest number of grades of unlikeness that we can satisfactorily deal with. The process of sorting profiles into their proper classes and of gradually building up a well-selected standard collection, is a laborious undertaking if attempted by any obvious way; but I believe it can be effected with comparative ease on the basis of measurements, as will be explained later on, and by an apparatus that will be described.

Fig. 2.



Fig. 3.



*Classification of Sets of Measures.*—Prisoners are now identified in France by the measures of their heads and limbs, the set of measures of each suspected person being compared with the sets that severally refer to each of many thousands of convicts. This idea, and the practical application of it, is due to M. Alphonse Bertillon. The actual method by which this is done is not all that could be theoretically desired, but it is said to be effective in action, and enables the authorities quickly to assure themselves whether the suspected person is or is not an old malefactor. The primary measures in the classification are four—namely, the head length, head breadth, foot length, and middle-finger length of the left foot and hand respectively. Each of these is classified according as it is large, medium, or small. There are thus three, and only three, divisions of head lengths, each of which is subdivided into three divisions of head breadth; again, each of these is further subdivided into three of foot length, and these again into three of middle-finger length; thus the number of primary classes is equal to three multiplied into itself four times—that is to say, their number is eighty-one, and a separate pigeon hole is assigned to each. All the exact measures and other notes on each criminal are written on the same card, and this card is stored in its appropriate pigeon-hole. The contents of each pigeon-hole are themselves sub-sorted on the same principle of three-fold classification in respect to other measures. This process can, of course, be extended indefinitely; but how far it admits of being carried on advantageously is another question. The fault of all hard-and-fast lines of classification, when variability is continuous, is the doubt where to place and where to look for values that are near the limits between two adjacent classes. Let us take Stature as an illustration of what must occur in every case, and let us represent its distribution by what I have called a “Scheme,” as shown in Fig. 4.

Here the statures of any large group of male adults such as those whom I had measured by the thousand at the International

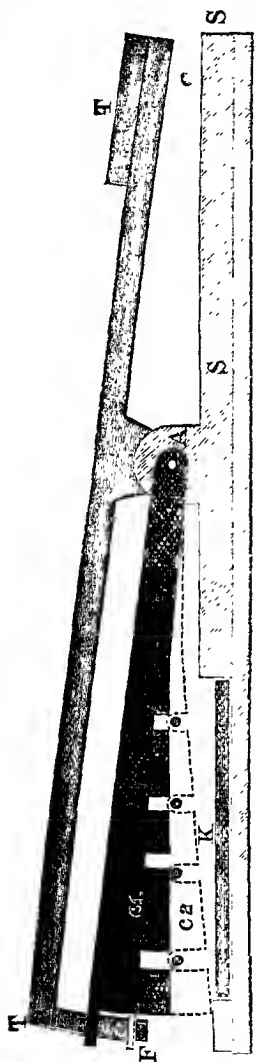


the points of intersection drop perpendiculars reaching the base at  $c_1, c_2$ . A similar figure is drawn at F. Then the ratio borne by the uncertain entries to the whole number of entries is as  $c_1 c_2 + e_1 e_2$  to A B. This, as seen by the diagram, is a very large proportion. There is a dilemma from which those who adopt hard-and-fast lines of classification cannot escape: either the fringe of uncertainty must be dangerously wide, or else the delicacy with which measures are made cannot be turned to anything like its full account. If the delicacy of the measurement is small, each of the fringes of uncertainty must be very wide: if the delicacy is great, the summed widths of all the fringes will be narrow, if there are only a few classes; but, by having only a few classes, most of the advantages of possessing delicate observations are wasted. The bodily measurements are so dependent on one another that we cannot afford to neglect small distinctions in an attempt to make an effective classification. Thus long feet and long middle-fingers usually go together. We therefore want to know whether the long feet in some particular person are accompanied by very long, or moderately long, or barely long fingers, though the fingers may in all three cases have been treated as long in M. Bertillon's system of classes, because they would be long as compared with those of the general population. Certainly his eighty-one combinations seem far from being equally probable. The more numerous the measures the greater would be their interdependence, and the more unequal would be the distribution of cases among the various possible combinations of large, small, and medium values. No attempt has yet been made to estimate the degree of their interdependence. I am therefore having the above measurements (with a slight necessary variation) recorded at my anthropometric laboratory for the purpose of doing so. This laboratory, I may add, is now open to public use under reasonable restrictions. It is entered from the Science Collections in the Western Galleries at South Kensington.

*Mechanical Selector.*—Feeling the advantage of possessing a method of classification that did not proceed upon hard-and-fast lines, I contrived an apparatus that is quite independent of them, and which I call a mechanical selector. Its object is to find which set, out of a standard collection of many sets of measures, resembles any one given set within any given degree of unlikeness. No one measure in any of the sets selected by the instrument can differ from the corresponding measure in the given set by more than a specified value. The apparatus is very simple; it applies to sets of measures of very description, and ought to act on a large scale as well as it does on a small one, with great rapidity, and be able to test several hundred sets by each movement. It relieves the eye and brain from the intolerable strain of tediously comparing a set of many measures with each of a large number of successive sets, in doing which a mental allowance has to be made for a *plus* or *minus* deviation of a specified amount in every entry. It is not my business to look after prisoners, and I do not fully know what

need may really exist for new methods of quickly identifying suspected persons. If there be any real need, I should think that this apparatus, which is contrived for other purposes, might, after obvious modifications, supply it.

Fig. 5.



Section of the apparatus, but the bridges and rods are not shown, only the section of the wires.

The apparatus consists, in principle, of a large number of strips of card or metal *c 1*, *c 2* (fig. 5), say 8 or 9 inches long, and having a common axis *A* passing through all their smaller ends. A tilting-frame *T*, which turns on the same axis, has a front cross-bar *F* (whose section is seen in fig. 5), on which the tips of the larger ends of all the cards rest whenever the machine is left alone. In this condition a counterpoise at the other end of *T* suffices to overcome the weight of all the cards, and this heavier end of *T* lies on the base-board *S*. When the heavy end of *T* is lifted, as shown in fig. 5, its front-bar *F* is of course depressed, and the cards being individually acted on by their own weights, are free to descend with the cross-bar unless they are otherwise prevented. The lower edge of each card is variously notched to indicate the measures of the person it represents. Only four notches are shown in the figure, but six could be employed in a card of 8 or 9 inches long, allowing compartments of 1 inch in length to each of six different measures. The position of the notch in the compartment allotted to it, indicates the corresponding measure according to a suitable scale. When the notch is in the middle of a compartment, it means that the measure is of mediocre amount; when at one end of it, the measure is of some specified large value or of any other value above that; when at the other end, the measure is of some specified

small value, or of any other value below it. Intermediate positions represent intermediate values according to the scale. Each of the cards corresponds to one of the sets of measures in the standard collection. The set of measures of the given person

are indicated by the positions of parallel strings or wires, one for each measure, that are stretched between rods and across bridges at either end of a long board set cross-ways to the eards. Their positions on the bridges are adjusted by the same scale as that by which the notches were cut in the cards. Figs. 6a and 6b are views of this portion of the apparatus, which acts as a key, and is of about 30 inches in effective length. The whole is shown in working position in fig. 7. When the key is slid into its place, and the heavy end of the tilting-frame T is raised, all the cards are free to descend so far as the tilting frame is concerned, but they

Fig. 6a.

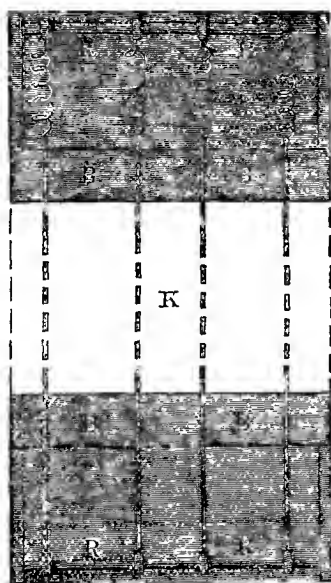
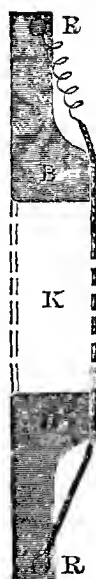


Fig. 6b.

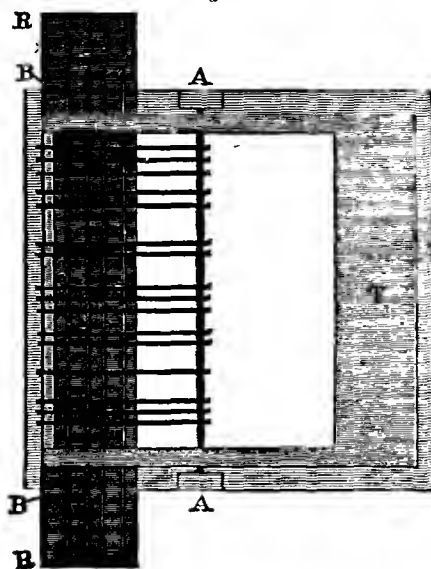


Plan and section of the key-board K.

are checked by one or more of the wires from descending below a particular level, except those few, if any, whose notches correspond throughout to the positions of the underlying wires. This is the case with the eard *c2* (fig. 5), drawn with a dotted outline, but not with *c1*, which rests upon the third wire, counting from the axis. As the wires have to sustain the weight of all or nearly all the cards, frequent narrow bridges must be interposed between the main bridges to sustain the wires from point to point. The cards should be divided into batches by partitions corresponding to these interposed bridges, else they may press sideways with enough friction to interfere with their free independent action. The action is improved by interposing stretched threads between each pair of adjacent cards

so that every card works in a separate compartment. None of these are shown in the figure. The method of adjusting the wires there shown, is simply By sliding the rings to which they are

Fig. 7.



Reduced plan of complete apparatus.

*Explanation.*—A, the common axis;  $c_1, c_2$ , the cards; T, tilting-frame, turning on A (the cards rest by their front ends on F, which is the front cross-bar of T, at the time when the heavy hinder end of T rests on the base-board S); K is the key-board; R R are the rods between which the wires are stretched; B B are the bridges at either end of the key-board, over which the wires pass. (The explanation refers to the other figs., as well as to this).

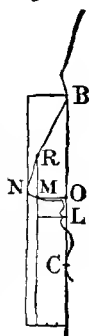
attached at either end, along the rod which passes through them. It is easy to arrange a more delicate method of effecting the adjustment if desired. Hitherto I have snipped out the notches in the cards with a cutter made on the same principle as that used by railway guards in marking the tickets of travellers. The width of the notch is greater than the width of the wire by an amount proportionate to the allowance intended to be made for error of measurement, and also for that due to mechanical misfit. There seems to be room for 500 cards or metal strips, and ample room for 200 or 300 of them, to be arranged in sufficiently loose order within the width of 30 inches. A key of that effective length would test all these by a single movement; it could also be applied in quick succession to any number of other sets of cards.

*Measurement of Profiles.*—The sharp outline of a photographed profile admits of more easy and precise measurement than the yield-

ing outline of the face itself. The measurable distances between the profiles of different persons are small, but the available measures are much more numerous than might have been expected, and their variations are more independent of one another than those of the limbs. I suspect that measures of the profile may be nearly as trustworthy as those of the limbs for approximate identification, that is, for excluding a very large proportion of persons from the possibility of being mistaken for the individual whose measurements are given. The measurement of a profile enables us to use a mechanical selector for finding those in a large standard collection to which they nearly correspond. From the selection thus made, the eye could easily make a further selection of those that suited best in other respects. A mechanical selector also enables us to quickly build up a standard collection step by step, by telling us whether or no each fresh set of measures falls within the limits of any of those already collected. If it does, we know that it is already provided for; if not, a new card must be added to the collection. There will be no fear of duplications, as every fresh-added standard will differ from all its predecessors by more than the specified range of permitted differences.

As regards the most convenient measurements to be applied to a profile for use with the selector, I am unable as yet to speak decidedly. If we are dealing merely with a black silhouette, such as the shadow cast on a wall by a small and brilliant light, the best line from which to measure seems to be *BC* in fig. 8; namely, that which touches both the concavity of the notch between the brow and nose, and the convexity of the chin. It is not difficult to frame illustrated instructions to explain what should be done in the cases where no line can be drawn that strictly fulfils these conditions. I have taken a considerable number of measures from the line that touches the brow and chin, but am now inclined to prefer that which I have just described. A sharp unit of measurement is given by the distance between this line and another drawn parallel to it just touching the nose, as at *N* in the figure. A small uncertainty in the direction of *BC* has but a very trifling effect on this distance. By dividing the interval between these parallel lines into four parts, and drawing a line through the third of the divisions, parallel to *BC*, we obtain the two important points of reference, *M* and *R*. *M* is a particularly well-defined point, from which *O* is determined by dropping a perpendicular from *M* upon *BC*. *O* seems the best of all points from which to measure. It is excellently placed for defining the shape and position of the notch between the nose and the upper lip, which is perhaps the most distinctive feature in the profile. *OL* can be determined with some precision; *OB* and *OC* are but coarse measurements.

Fig. 8.



In addition to these and other obvious measures, such as one or more to define the projection of the lips, it would be well to mea-

sure the radius of the circle of curvature of the depression at B, also of that between the nose and the lip, for they are both very variable and very distinctive. So is the general slope of the base of the nose. The difficulty lies not in selecting a few measures that will go far towards negatively identifying a face, but in selecting the best—namely, those that can be most precisely determined, are most independent of each other, most variable, and most expressive of the general form of the profile. I have tried many different sets, and found all to be more or less efficient, but have not yet decided to my own satisfaction which to adopt.

We will now suppose that either by the above method or by any other, a standard collection of doubly outlined portraits such as that in fig. 3, has been made and come into use, so that a profile can be approximately described by referring it to number so-and-so in the catalogue. If the number it contained was less than 1,000, three figures would suffice to define any one of them. We will now consider how a yet closer description of the profile may be given by using a few additional figures. One way of doing so is to have short cross-lines drawn at critical positions between the two outlines of the standard, and to suppose each of them to be divided into eight equal parts. The intersection of the cross-lines with the outer border would count as 0; that with the inner border as 8; and the intermediate divisions from 1 to 7. As the cross-lines would be very short, a single numeral would thus define the position of a point in any one of them, with perhaps as much precision as the naked eye could utilise. By employing as many figures as there are cross-lines in the standard, each successive figure for each successive cross-line, a corresponding number of points in the profile would be fixed with great accuracy. Suppose a total of nine figures to be allowed, then the first three figures would specify the catalogue number of the portrait to be referred to, and the remaining six figures would determine six points in the outline of the portrait with greatly increased precision.

I may say that after numerous trials of different methods for comparing portraits successively by the eye, I have found none so handy and generally efficient as a double-image prism, which I largely used in my earlier attempts in making composite portraits.

I have not succeeded in contriving an instrument that shall directly compare a given profile with those in a standard collection, and which shall at the same time act with anything like the simplicity of a mechanical selector, and with the same quick decision in acceptance or rejection. Still, I recognise some waste of opportunity in not utilising the power of varying the depths of the notches in the cards, independently of their longitudinal position.

*Personal Characteristics.*—These are to be found in much more minute portions of the body than those just described. Leaving aside microscopic peculiarities, which are of unknown multitudes, such as might be studied in the 800,000,000 specimens cut by a microtome, say of one two-thousandth part of an inch in thickness,

and one-tenth of an inch each way in area, out of the 4,000 cubic inches or so of the flesh, fat, and bone of a single average human body, there are many that are visible with or without the aid of a lens.

The markings in the iris of the eye are of the above kind. They have been never adequately studied, except by the makers of artificial eyes, who recognise thousands of varieties of them. These markings well deserve being photographed from life on an enlarged scale. I shall not dwell now upon these, nor on such peculiarities as those of handwriting, nor on the bifurcations and interlacements of the superficial veins, nor on the shape and convolutions of the external ear. They all admit of brief approximate description by the method just explained—namely, by reference to the number in a standard collection of the specimen that shall not differ from it by more than a specified number of units of unlikeness. I have already explained what is meant by a unit of unlikeness, and the mechanical means by which a given set of measures can be compared with great ease with every set in a standard collection of sets of measures.

Perhaps the most beautiful and characteristic of all superficial marks are the small furrows, with the intervening ridges and their pores, that are disposed in a singularly complex yet regular order on the under surfaces of the hands and the feet. I do not now speak of the large wrinkles in which chiromantists delight, and which may be compared to the creases in an old coat, or to the deep folds in the hide of a rhinoceros, but of those fine lines of which the buttered fingers of children are apt to stamp impressions on the margins of the books they handle, that leave little to be desired on the score of distinctness. These lines are found to take their origin from various centres, one of which lies in the under surface of each finger-tip. They proceed from their several centres in spirals and whorls, and distribute themselves in beautiful patterns over the whole palmar surface. A corresponding system covers the soles of the feet. The same lines appear with little modification in the hands and feet of monkeys. They appear to have been carefully studied for the first time by Purkinje in 1822, and since then they have attracted the notice of many writers and physiologists, the fullest and latest of whom is Kollman, who has published a pamphlet, "*Tastapparat der Hand*" (Leipzig, 1883), in which their physiological significance is fully discussed. Into that part of the subject I am not going to enter here. It has occurred independently to many persons to propose finger-marks as a means of identification. In the last century, Bewick, in one of the vignettes in the "*History of Birds*," gave a woodcut of his own thumb-mark, which is the first clear impression I know of, and afterwards one of his finger-marks. Some of the latest specimens that I have seen are by Mr. Gilbert Thomson, an officer of the American Geological Survey, who, being in Arizona, and having to make his orders for payment on a camp sutler, hit upon the expedient of using his own thumb-mark to serve the

same purpose as the elaborate scroll engraved on blank cheques—namely, to make the alteration of figures written on it impossible without detection. I possess copies of two of his cheques. A San Francisco photographer, Mr. Tabor, made enlarged photographs of the finger-marks of Chinese, and his proposal to employ them as a means of identifying Chinese immigrants, seems to have been seriously considered. I may say that I can obtain no verification of a common statement that the method is in actual use in the prisons in China. The thumb-mark has been used there as elsewhere to form a manual impression in attestation of deeds, such as a man might make with a common seal, not his own, and say, "This is my act and deed;" but I cannot hear of any elaborate system of finger-marks having ever been employed in China for the identification of prisoners. It was, however, largely used in India, by Sir William Herschel, many years ago, when he was an officer of the Bengal Civil Service. He found it to be most successful in preventing personation, and in putting an end to disputes about the authenticity of deeds. He described his method fully in "*Nature*," in 1880 (Vol. xxiii, p. 76), which should be referred to; also a paper by Mr. Faulds in the next volume. I may in addition allude to articles in the American journal "*Science*," 1886 (Vol. viii, pp. 166 and 212).

The question arises whether these finger-marks remain unaltered throughout the life of the same person. In reply to this, I am enabled to submit a most interesting piece of evidence, which thus far is

Fig. 9.



Enlarged impressions of the fore and middle finger tips of the right hand of Sir William Herschel, made in the year 1860.

unique, through the kindness of Sir Wm. Herschel. It consists of the imprints of the two first fingers of his own hand, made in 1860

and in 1888 respectively—that is, at periods separated by an interval of twenty-eight years. I have also two intermediate imprints, made by him in 1874 and in 1883 respectively. Figs. 9 and 11 are cut from photographs on an enlarged scale of the imprints of 1860 and 1888, which were made direct upon the engraver's block; these wood-cuts may therefore be relied on as being very correct representations of the originals in my present possession. Fig. 10 refers to the portion of fig. 9 to which I am about to draw attention. On first examining these and other finger-marks, the eye wanders and becomes confused, not knowing where to fix itself; the points shown in fig. 10 are those which it ought to select. They are the places

Fig. 10.



Positions of furrow-heads and bifurcations of furrows, in Fig. 9.

Fig. 11.



Enlarged impressions of the fore and middle finger tips of the right hand of Sir William Herschel, made in the year 1888.

at which each new furrow makes its first appearance. The furrows may originate in two principal ways, which are not always clearly

distinguishable: (1) the new furrow may arise in the middle of a ridge; (2) a single furrow may bifurcate and form a letter Y. The distinction between (1) and (2) is not greatly to be trusted, because one of the sides of the ridge in case (1) may become worn, or be narrow and low, and not always leave an imprint, thus converting it into case (2); conversely case (2) may be converted into case (1). The position of the origin of the new furrow is, however, none the less defined. I have noted the furrow-heads and bifurcations of furrows in fig. 9, and shown them separately in fig. 10. The reader will be able to identify these positions with the aid of a pair of compasses, and he will find that they persist unchanged in fig. 11, though there is occasionally some uncertainty between cases (1) and (2). Also there is a little confusion in the middle of the small triangular space that separate two distinct systems of furrows, much as eddies separate the stream lines of adjacent currents converging from opposite directions. A careful comparison of figs. 9 and 11 is a most instructive study of the effects of age. There is an obvious amount of wearing and of coarseness in the latter, but the main features of both are the same.

I happen to possess a little apparatus that proves very convenient for examining finger-marks and for recording the positions of furrow heads. It is a slight and small, but well-made wooden pentagraph, multiplying five-fold, in which a very low-power microscope, with *coarse* cross-wires, forms the axis of the short limb, and a pencil-holder forms the axis of the long limb. I contrived it for quite another use—namely, the measurements of the length of wings of moths in some rather extensive experiments that are now being made for me in pedigree moth-breeding. It has proved very serviceable in this inquiry also, and was much used in measuring the profiles spoken of in the last article. Without some moderate magnifying power the finger-marks cannot be properly studied. It is a convenient plan, in default of better methods, to prick holes with a needle through the furrow-heads into a separate piece of paper, where they can be studied without risk of confusing the eye. There are peculiarities often found in furrows that do not appear in these particular specimens, and to which I will not further refer. In fig. 10 the form of the origin of the spirals is just indicated. These forms are various; they may be in single or in multiple lines, and the earlier turns may form long loops or be nearly circular. My own ten fingers show at least four distinct varieties.

Notwithstanding the experience of others to the contrary, I find it not easy to make clear and perfect impressions of the fingers. The proper plan seems to be to cover a flat surface, like that of a piece of glass or zinc, with a thin and even coat of paint, whether it be printers' ink or Indian ink rubbed into a thick paste, and to press the finger lightly upon it so that the ridges only shall become inked, then the inked fingers are pressed on smooth and slightly damped paper. If a plate of glass be smoked over a paraffin lamp, a beautiful negative impression may be made on it by the finger,

suitable for a lantern transparency. The blackened finger may afterwards be made to leave a positive impression on a piece of paper, that must be varnished if the impression is to be rendered permanent. All this is rather dirty work, but people do not seem to object to it; rivalry and the hope of making continually better impressions carries them on. It is troublesome to make plaster casts; modelling-clay has been proposed; hard wax, such as dentists use, acts fairly well; sealing-wax is excellent if the heat can be tolerated; I have some good impressions in it. For the mere study of the marks, no plan is better than that of rubbing a little thick paste of chalk ("prepared chalk") and water or sized water upon the finger. The chalk lies in the furrows, and defines them. They might then be excellently photographed on an enlarged scale. My own photographie apparatus is not at hand, or I should have experimented on this. When notes of the furrow-heads and of the initial shape of the spiral have been made, the measurements would admit of comparison with those in catalogued sets by means of a numerical arrangement, or even by the mechanical selector described above. If a cleanly and simple way could be discovered of taking durable impressions of the finger tips, there would be little doubt of their being serviceable in more than one way.

In concluding my remarks, I should say that one of the inducements to making these inquiries into personal identification has been to discover independent features suitable for hereditary investigation. It has long been my hope, though utterly without direct experimental corroboration thus far, that if a considerable number of variable and independent features could be catalogued, it might be possible to trace kinship with considerable certainty. It does not at all follow because a man inherits his main features from some one ancestor, that he may not also inherit a large number of minor and commonly overlooked features from many ancestors. Therefore it is not improbable, and worth taking pains to inquire, whether each person may not carry visibly about his body undeniable evidence of his parentage and near kinships.

#### *Postscript.*

Since delivering this lecture, I have had the opportunity of seeing M. Bertillon's system in operation at Paris, and was much impressed with the skill and celerity shown by his staff of assistants, with the large amount of work got through, and with the practical overcome of theoretical difficulties, especially in the method of subsorting cards in the movable trays, which are, in fact, the "pigeon holes." Numerous data methodically inscribed on each card, in addition to the primary measures and the free use of coloured tickets to aid in the subdivisions, make it easy to a practised person to hunt rapidly through the contents of any one tray. These additional data include a notice of scars and personal marks, and very good photographs of the profile and full face.

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## THE "LONGSTONE" AT MOTTISTONE, ISLE OF WIGHT.

*To the Editor of the "Journal of the Anthropological Institute."*

DEAR SIR,

There is a short description of the "Longstone" at Mottistone, in the Isle of Wight, in a paper of mine which was published in the *Journal* for August, 1884. I there state that the "Longstone" is an upright stone, having a large flat stone (9 feet  $\times$  4 feet  $\times$  2 feet) lying on the north-east side of it, which I thought might have been slightly moved from its original position. On revisiting the stones last June I found that the flat stone had been shifted about ten feet, and that it now lies to the south-east and not to the north-east of the upright stone. Whether anyone has been digging there, and, if so, whether anything has been found, I do not know; but I think the change in the position of the stone is worth noting on its own account, and I am the more anxious that it should be noted in our *Journal*, since any of its readers going to the stones with my description in their hands might suppose that I had made a mistake; my original sketches, however, clearly show that this is not the case.

I am, dear Sir, yours truly,

A. L. LEWIS.

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 ANTHROPOMETRIC STATISTICS FROM AMHERST COLLEGE,  
 MASS., U.S.A.

In the last Volume (xvii) of this *Journal*, at page 357, will be found a reprint of a brief account of the mean anthropometric results obtained at the gymnasium of Amherst College, Amherst, Mass., U.S.A., by Prof. E. Hitchcock, M.D. His observations refer to so unusual a variety of characteristics, carefully made by the same methods and instruments, and applied to so homogeneous a group, that more detailed accounts would have been very welcome to anthropologists. They would serve, at least, two purposes, the one to show the average variability of each characteristic, and the other to show their interdependence. With a view of determining the first of these objects, I wrote to Dr. Hitchcock, urging the preparation of tables, drawn up in the form by which the distribution of any faculty among the individual members of a group is usually expressed. He responded most cordially to my suggestion, and specially prepared the following tables in manuscript, which are here published, preceded by extracts from his accompanying letter.

FRANCIS GALTON.

"I have at length made out the mean tables of thirteen items, which were suggested as appropriate for study by you.

"By a little error I have not got the same number of observations on each item, but this is because I did not get the maximum and minimum of my whole records for a basis, but inadvertently took those for only one college year, and this unfortunately did not cover every case.

"EDWARD HITCHCOCK."

HEIGHT OF BODY. (*In Millimètres.*)

Years.	1600	1610	1620	1630	1640	1650	1660	1670	1680	1690	1700	1710	1720	1730	1740	1750	1760	1770	1780	1790	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900	Total.
16	0	0	1	0	0	0	0	0	1	0	1	0	1	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	12
17	0	0	1	2	0	1	3	0	2	3	3	4	6	6	7	1	1	4	2	3	2	1	1	1	1	0	0	0	0	0	0	45
18	0	3	1	0	2	4	4	6	4	6	4	7	7	7	11	1	6	8	4	4	5	2	3	3	3	0	0	0	0	0	0	91
19	0	0	3	4	3	0	7	7	6	5	4	19	13	14	4	6	10	4	6	2	3	2	3	3	1	0	0	0	0	0	0	121
20	0	2	0	4	2	2	0	7	4	6	10	7	14	14	4	6	7	7	10	5	4	3	3	3	1	0	0	0	0	0	0	130
21	0	1	2	4	2	2	0	6	8	5	3	9	12	10	4	5	7	5	3	3	4	3	3	1	0	0	0	0	0	0	0	109
22	0	0	1	3	2	1	3	6	8	5	4	3	11	10	4	5	6	4	1	4	0	0	0	1	1	0	0	0	0	0	1	74
23	1	0	1	0	1	1	0	5	3	3	0	3	4	3	1	4	4	1	0	3	1	1	0	1	1	0	0	0	0	0	0	30
24	0	0	0	1	2	2	1	2	1	2	2	0	4	2	3	1	6	0	0	0	3	1	1	0	1	0	0	0	0	0	0	33
25	0	0	0	0	0	1	1	0	1	0	0	0	2	2	1	1	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	11
26	0	0	0	0	0	0	0	0	0	3	0	0	1	1	2	1	0	1	0	0	0	2	0	1	0	0	0	0	0	0	0	14
Total	1	10	11	17	14	11	31	31	33	34	31	49	63	57	37	41	49	27	27	28	16	16	9	10	3	7	3	3	0	0	1	670

HEIGHT OF NAVEL. (*In Millimètres.*)

Years.	920	930	940	950	960	970	980	990	1000	1010	1020	1030	1040	1050	1060	1070	1080	1090	1100	1110	1120	1130	1140	1150	1160	1170	Total.
16	0	0	0	0	0	1	0	0	1	0	1	1	1	1	2	2	3	4	0	1	0	0	0	0	0	0	11
17	0	0	0	2	3	0	1	5	4	5	7	8	9	9	8	6	5	4	4	4	1	1	0	0	0	1	47
18	0	0	1	1	1	1	2	4	5	11	13	10	10	11	11	6	5	4	5	4	0	0	0	0	1	1	94
19	1	1	2	3	3	3	4	5	9	13	15	12	12	13	15	9	7	6	6	4	2	2	1	0	0	1	121
20	0	1	1	3	7	5	4	3	10	10	15	12	13	8	11	6	5	4	4	4	2	0	1	0	0	0	132
21	0	1	0	3	0	3	5	9	16	11	18	10	16	11	13	9	7	6	4	4	2	0	1	0	0	0	107
22	0	1	2	3	1	2	2	3	6	9	7	7	7	2	6	3	3	1	1	1	0	0	0	0	0	0	74
23	0	0	0	0	2	1	2	1	2	1	2	0	0	0	5	0	0	0	0	2	2	1	0	0	0	0	29
24	0	0	0	0	0	1	0	0	4	0	2	2	2	0	3	2	4	0	0	3	2	0	1	0	0	0	33
25	0	0	1	0	1	1	0	1	1	1	2	1	0	1	0	0	0	1	0	1	0	0	1	0	0	0	11
26	0	0	0	0	1	1	0	1	1	1	1	2	0	0	2	1	1	0	0	1	0	0	1	0	0	0	14
Total	2	3	11	14	18	29	33	31	39	56	82	60	49	41	57	35	40	21	17	14	7	6	4	0	1	3	673

HEIGHT OF KNEE. (*In Millimètres.*)

Years.	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	Total.
16	0	0	0	0	3	3	0	2	1	0	2	1	1	0	0	0	0	13
17	0	1	0	5	4	7	7	5	6	3	4	1	1	0	0	0	1	45
18	0	2	2	6	9	8	12	18	19	16	5	3	1	1	1	1	0	95
19	0	1	5	8	14	11	20	22	12	7	10	8	2	0	0	0	0	121
20	0	1	8	9	16	16	26	20	18	9	9	3	2	0	0	1	0	132
21	0	1	2	17	15	12	12	18	13	5	8	3	2	0	0	1	0	107
22	1	1	5	3	10	10	9	12	8	10	1	2	2	0	0	0	0	72
23	0	1	1	1	7	1	4	5	4	4	1	0	1	0	0	0	0	30
24	0	0	2	0	5	4	5	3	6	1	2	0	0	0	0	0	0	33
25	0	0	2	1	1	1	0	2	1	1	0	1	4	0	0	0	0	11
26	0	1	0	0	2	0	3	3	1	1	0	1	0	1	0	0	1	14
Total	2	10	27	50	79	73	98	107	90	57	42	29	14	4	2	2	2	673

SITTING HEIGHT. (*In Millimètres.*)

Years.	800	810	820	830	840	850	860	870	880	890	900	910	920	930	940	950	960	970	980	990	1000	Total.
16	0	0	0	0	0	1	1	1	2	0	3	0	0	1	0	0	1	0	0	0	0	11
17	0	0	0	0	2	4	5	8	7	7	8	1	1	2	2	2	2	0	0	0	0	46
18	0	0	0	0	1	4	8	13	7	11	11	11	9	7	9	7	4	2	0	0	0	92
19	0	0	0	1	1	2	3	11	11	13	21	16	11	11	3	10	2	2	2	0	0	120
20	2	1	0	1	1	2	4	13	11	16	16	13	13	11	5	10	0	0	0	0	1	131
21	0	0	1	0	0	2	3	7	11	14	14	14	14	20	2	2	2	2	0	0	0	110
22	0	0	0	1	0	5	3	4	6	8	10	8	10	6	5	5	2	0	0	0	0	71
23	0	0	0	1	0	2	2	2	4	4	2	2	4	5	1	2	0	1	0	0	1	31
24	0	0	0	0	0	6	1	0	5	3	2	2	4	5	1	0	0	0	0	0	0	33
25	0	0	0	0	0	1	0	0	1	1	1	1	4	0	1	0	1	0	0	0	0	11
26	0	0	0	0	0	0	0	1	1	1	3	1	3	3	1	0	1	0	0	0	0	11
Total	2	1	3	3	10	15	23	57	73	91	79	77	71	31	25	15	6	3	0	2	673	

GIRTH OF HEAD. (*In Millimètres.*)

[illegible]

BREADTH OF LEAD. (*In Millimètres.*)

Years.	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	Total.
16	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	11
17	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	47
18	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	95
19	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	119
20	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	131
21	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	131
22	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	141
23	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	74
24	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	30
25	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	33
26	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	11
Total	3	1	7	5	18	8	11	23	22	32	60	40	45	51	76	47	33	33	30	23	23	16	14	5	18	3	8	0	0	676

BREADTH OF SHOULDERS. (*In Millimètres.*)

Years.	370	380	390	400	410	420	430	440	450	460	470	480	490	500	Total
16	0	1	1	3	0	1	0	2	1	1	0	0	0	0	10
17	5	1	4	4	5	7	10	4	4	1	1	1	0	0	47
18	1	3	6	13	13	14	8	15	12	5	3	1	0	0	94
19	2	1	4	6	13	31	28	16	12	7	2	1	0	0	121
20	0	1	4	3	17	26	23	21	18	11	5	2	0	0	133
21	0	0	5	3	8	18	18	24	17	8	5	1	2	0	110
22	0	0	2	3	5	10	16	12	13	7	5	3	0	0	76
23	0	1	1	1	4	3	6	7	1	4	3	0	0	0	31
24	0	0	1	3	2	2	3	10	4	5	1	0	1	1	33
25	0	0	0	0	2	2	1	1	3	1	1	0	0	0	11
26	0	0	0	1	0	1	1	2	3	5	1	0	0	0	14
Total	8	8	28	40	69	115	112	114	88	65	27	9	6	1	680

BREADTH OF HIPS. (*In Millimètres.*)

Years.	300	305	310	315	320	325	330	335	340	345	350	355	360	365	370	375	380	385	Total.
16	0	2	0	2	2	2	1	0	1	0	0	0	0	0	0	0	0	0	10
17	4	9	10	10	3	5	3	5	0	2	1	0	1	0	0	0	0	0	45
18	3	10	10	9	9	11	15	6	6	4	3	2	0	0	0	0	0	2	90
19	5	7	10	20	19	14	14	14	7	3	4	0	0	2	0	1	1	0	121
20	8	2	11	14	21	18	18	9	12	7	3	3	2	0	0	0	0	2	129
21	3	4	9	15	11	17	14	12	17	1	3	1	0	0	0	0	0	0	108
22	4	3	5	6	7	11	9	7	11	4	2	2	1	0	0	0	0	0	72
23	2	1	2	3	2	4	7	1	5	0	1	0	2	0	0	0	0	0	31
24	1	1	2	2	0	3	4	7	6	1	2	0	0	0	1	1	0	0	33
25	1	0	1	0	0	3	1	1	1	2	1	0	0	0	0	0	0	0	11
26	0	0	1	1	0	3	0	1	3	1	3	1	0	0	0	0	0	0	14
Total	31	39	53	82	76	91	86	63	59	25	23	9	6	2	1	2	1	4	664

LENGTH SHOULDER ELBOWS. (*In Millimètres.*)

Years.	330	340	350	360	370	380	390	400	410	420	Total.
16	0	0	1	5	2	2	1	0	0	0	11
17	1	2	8	10	19	16	1	1	0	0	68
18	1	1	9	17	26	31	1	1	0	0	91
19	1	2	14	26	29	18	17	3	1	0	111
20	1	8	15	28	35	28	11	3	4	0	133
21	0	10	21	30	22	15	9	6	1	0	114
22	2	6	8	20	17	13	4	3	1	0	76
23	1	2	1	8	3	6	6	3	0	1	31
24	0	0	2	8	8	6	6	2	0	0	33
25	0	1	3	2	1	2	1	0	0	0	10
26	0	0	1	4	1	2	3	1	1	1	14
Total	7	39	83	158	103	121	77	23	8	3	682

LENGTH ELBOW TIPS. (*In Millimètres.*)

Years.	400	410	420	430	440	450	460	470	480	490	500	510	Total.
16	0	0	0	0	0	3	4	0	2	0	0	0	11
17	0	2	2	3	7	14	7	9	1	0	1	0	46
18	0	2	5	4	12	20	18	17	11	4	1	1	96
19	0	2	14	13	19	23	23	20	11	5	1	1	122
20	0	2	4	10	22	25	26	26	10	5	1	1	132
21	0	2	2	12	21	24	16	16	6	8	2	0	111
22	1	0	4	5	12	18	14	10	6	4	1	1	75
23	1	0	6	3	3	5	4	4	1	2	0	1	29
24	0	0	1	1	7	5	6	8	1	3	0	1	33
25	0	0	0	0	3	3	2	1	1	1	0	0	11
26	0	0	0	1	2	1	3	2	3	0	2	0	11
Total	2	10	32	52	113	140	123	113	58	32	9	5	679

LENGTH OF FEET. (*In Millimètres.*)

Years.	235	240	245	250	255	260	265	270	275	280	285	290	Total.
16	0	0	2	0	2	0	3	2	1	0	0	0	10
17	1	2	5	9	9	8	6	3	3	0	2	0	48
18	1	6	9	12	9	23	19	7	6	0	0	0	94
19	3	7	12	12	24	20	20	15	4	3	0	1	121
20	2	6	7	21	19	26	25	12	8	2	4	0	132
21	2	3	6	27	18	17	18	9	5	4	0	0	109
22	3	1	3	14	16	11	11	8	5	0	1	1	74
23	2	0	4	3	6	8	2	1	3	1	0	1	31
24	2	0	2	7	10	4	3	3	2	1	0	1	33
25	0	0	0	3	0	4	3	0	1	0	0	0	11
26	0	0	2	1	3	3	1	0	3	0	0	1	14
Total	14	25	52	109	116	124	111	60	41	13	7	5	677

STRETCH OF ARMS. (*In Millimètres.*)

Years.	1610	1620	1630	1640	1650	1660	1670	1680	1690	1700	1710	1720	1730	1740	1750	1760	1770	1780	1790	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	Total.
16	0	0	0	0	0	0	0	1	2	1	0	0	0	0	0	1	4	4	0	3	1	2	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	11
17	0	0	0	0	0	0	0	2	2	3	4	4	7	3	5	6	4	4	6	6	3	7	7	6	3	3	1	0	0	3	1	0	0	0	0	0	0	0	0	46
18	0	0	0	0	0	0	0	2	3	4	5	6	7	8	9	9	8	8	9	6	5	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	92	
19	0	1	1	1	1	1	1	2	3	4	5	6	7	8	9	9	8	7	9	8	6	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	0	136	
20	1	1	1	1	1	1	1	2	3	4	5	6	7	8	9	9	8	6	9	6	5	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	109	
21	1	0	0	0	0	0	0	2	3	4	5	6	7	8	9	9	8	6	8	6	5	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	73	
22	1	0	0	0	0	0	0	2	3	4	5	6	7	8	9	9	8	6	8	6	5	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	30	
23	1	0	0	0	0	0	0	2	3	4	5	6	7	8	9	9	8	6	8	6	5	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	33	
24	0	0	0	0	0	0	0	2	3	4	5	6	7	8	9	9	8	6	8	6	5	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	11	
25	0	0	0	0	0	0	0	2	3	4	5	6	7	8	9	9	8	6	8	6	5	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	11	
26	0	0	0	0	0	0	0	2	3	4	5	6	7	8	9	9	8	6	8	6	5	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	14	
'total	2	2	4	3	3	6	12	15	18	19	26	28	30	33	34	40	38	42	32	30	33	38	36	28	23	21	13	17	11	10	6	7	6	2	1	4	1	5	677	

LUNG CAPACITY. (*In Litres and Hundredths.*)

Years.	2-90	3-10	3-30	3-50	3-70	3-90	4-10	4-30	4-50	4-70	4-90	5-10	5-30	5-50	5-70	3-90	6-10	6-30	6-50	6-70	Total.
16	0	0	1	3	2	1	2	2	0	0	0	0	0	0	1	0	0	0	0	0	11
17	0	2	4	7	7	4	3	6	4	4	2	2	0	0	0	0	0	0	0	0	45
18	1	2	5	8	11	15	9	10	12	10	3	3	2	1	1	0	0	0	0	0	93
19	0	3	6	9	17	17	13	18	16	4	7	3	3	3	2	0	0	0	0	1	122
20	1	3	4	9	18	11	15	15	14	15	6	12	4	2	3	1	0	0	0	0	133
21	0	1	7	7	16	14	10	11	17	11	10	6	4	2	1	0	1	0	0	0	108
22	0	1	1	7	4	8	9	7	11	9	7	3	4	3	0	1	0	0	2	0	75
23	1	0	1	4	1	2	1	6	5	2	3	3	1	0	0	0	0	0	0	0	81
24	0	0	3	1	1	1	3	9	6	2	3	2	2	0	0	1	0	0	0	0	31
25	0	0	0	0	2	0	1	1	2	1	3	0	0	0	0	0	0	0	0	0	11
26	0	0	0	0	0	1	3	3	1	0	3	1	0	0	0	0	0	0	0	0	11
Total	3	12	24	56	80	71	69	91	78	58	46	35	29	11	8	4	1	0	2	1	677

## GEN. PITT-RIVERS'S EXPLORATIONS.

During the recent meeting of the British Association at Bath, General Pitt-Rivers brought out the second of the splendid volumes in which he has recorded the results of his excavations on his own estates on the borders of Wiltshire and Dorsetshire, and we take the present opportunity of laying before our readers a review of the two volumes,<sup>1</sup> hoping in this way to draw especial attention to the work so admirably carried out by the author, who possesses in an eminent degree all the qualifications necessary for explorations of this kind, such as knowledge and experience, wealth and leisure, and, above all, inexhaustible patience and enthusiasm, all which are amply exemplified in the volumes before us, which, by the liberality of their author, are placed in the library of the Institute, having been printed for private distribution only.

The Pitt-Rivers estates are situated just on the borders of Wilts and Dorset, counties full of relics of British and Roman times.

"The region in question," says General Pitt-Rivers in his preface, "strengthened by the dense forests which covered Dorsetshire at that time, appears throughout the early history of these islands to have served as a standing point for first established races, in resisting succeeding waves of immigration from the east. Here the abundance of long barrows shows that the Neolithic folk, of presumably Iberian origin, congregated in large numbers. Here the Goidels or earliest wave of the Celtic population, are shown by Professor Rhys to have resisted the succeeding wave of Brythons coming from the same quarter. Here also Mr. Green has shown in his "Making of England" the West Welsh, of whatever ethnic elements they may have been composed, withstood the Saxons for a long time after the latter had penetrated as far as Wilton."

A border-land such as this seems to offer a peculiarly favourable field for archaeological research, especially as it includes a portion of that great forest tract known as Cranborne Chase, which, having for many centuries been free from the plough and the hoe, has preserved the remains within it undisturbed and unmixed with those of a later date.

Thurnam enumerates only twelve long barrows in Dorsetshire, and all on the borders of Wilts; but none of these seem to have come within the district explored by General Pitt-Rivers. Of round barrows he has opened a great number and finds that they all confirm Thurnam's theory, that the makers of these barrows were of a taller race than those who reared the gigantic long barrows, and brachycephalic, instead of dolichocephalic like the more ancient long-barrow people of the Stone Age. The round barrows opened by General Pitt-Rivers were found to be all of the Bronze Age, and contained some fine pottery and flint implements, although apparently fragments only of bronze. These tumuli would seem

<sup>1</sup> "Excavations in Cranborne Chase, near Rushmore, on the borders of Dorset and Wilts." By Lieutenant-General Pitt-Rivers, F.R.S., Vols. I and II, 1887-8.

to prove that the inhabitants of this part of the country, at all events during the Bronze Age, were Celts or Belgæ; but the further excavations of General Pitt-Rivers in the adjoining British villages reveal to us a much smaller dolichocephalic race, resembling so nearly the Neolithic folk of the long barrows of Wiltshire and Gloucestershire, as to be regarded by him as remnants of the same people, an idea confirmed by the measurements of Dr. Beddoe and Dr. Garson.

The period to which the relics found principally belong, is included between the coming of the Romans and the Saxon invasion. The people are designated as Romanized Britons, and it is suggested that their extremely small stature may be the result of slavery, or of the taller men having been drafted into the Roman legions.

Among the many curious facts relating to these people, that which seems the most singular is the complete change in the mode of burial. Assuming them to belong to the same race as the long barrow people, we find that not only have they forsaken the rearing of gigantic tumuli, but they seem to have gone to the other extreme, and to have buried their dead in ditches or pits, the latter being apparently disused chalk pits, from which chalk had been excavated for agricultural purposes, and which have been filled up, and afterwards used for sepulchral purposes as being easier of excavation. This change of burial customs may perhaps be due to Roman influence, but in that case we should expect to find burials according to Roman methods; these, however, do not appear to have been found, and from the fact recorded, that in two cases of burial in these pits there seems evidence that death resulted from stoning, the idea suggests itself that these burials were only of the poor or criminal classes, and that the sepulchres of the more wealthy have yet to be found, perhaps in a necropolis at some distance from the villages, an idea which seems reasonable from analogy, and from the very small number of weapons or ornaments found with these remains. But although the Romanised Britons had given up the rearing of long barrows, they do not seem to have forgotten how to throw up gigantic earthworks, for Bokerley Dyke in which many of the relics were found is a great fortification nearly nine miles in length, raised apparently for the protection of villages to the westward, from the Saxon invaders pressing upon them from the East. This great dyke may be compared with the still greater Wansdyke, the date of which has yet to be ascertained, but the sections cut by General Pitt-Rivers in Bokerley Dyke, show the date of that with tolerable precision, as 500 Roman coins, some as late as Constantius, have been found there.

The Romano-British villages of Woodcuts and Rotherley, the chief scene of General Pitt-Rivers's excavations, both lie to the rear of Bokerley Dyke, and in both there are enclosures, entrenchments, and ditches, apparently designed to separate the various quarters into which each village was divided, and which, perhaps, were occupied by different ranks or sections of the population, as was

the case in many ancient cities. At Rotherley, the centre of the village appears to have been enclosed within a circular rampart and ditch, the former at present of insignificant height, but perhaps originally much higher. General Pitt-Rivers points out that these circular enclosures are common in British villages, and says they are sometimes called "sacred circles." The plan on the map is certainly strongly suggestive of the great earthwork surrounding the gigantic stone circles at Avebury, and both bear a considerable resemblance to Irish Rathes, assigned by tradition to the "*little folk*," or fairies, which, taken in connection with the extremely small size of the ancient inhabitants of these Romano-British villages, may point to a racial connection between the constructors.

Most of the relics found in these villages were described by General Pitt-Rivers in a paper published in the *Journal* of this Institute for February, 1888, but we may here briefly recapitulate; they consist chiefly of pottery of various kinds, including New Forest ware and Samian, with British imitations of the latter, and in the barrows of the Bronze Age drinking cups of ancient British make. The bronze and iron articles include many fibulæ of peculiar form and considerable beauty; a few fibulæ of silver and of silver and bronze gilt have also been found, but no gold object is recorded. Of glass, jet, and coral we have a few specimens, but Kimmeridge shale seems to have been the chief substance employed for ornamental purposes. The beautiful engraving on a tablet of this shale found at Rotherley is reproduced on the handsome binding of General Pitt-Rivers's volumes; this is supposed to have been a writing tablet, and to have been covered with wax; an iron stylus has also been found, but no inscriptions of any kind. We must refer our readers to the volumes for the minute measurements and illustrations of the several finds and of the human and animal remains, all of which are given with the greatest possible care and attention to the locality and to the depth of the excavation. An examination of these tables will show the difference between the men and domesticated animals of the Romano-British period, and those of the present day. The horses and cows were small, and it would seem that both were used as beasts of burden, as iron shoes of both have been found. The horse shoe of that day was apparently lighter and better adapted to the animal's hoof than that now in use. General Pitt-Rivers calls attention to the sinuosity of the edge, which reminds us of one in the Museum at Cirencester, said to be Roman, but which is lighter and more decidedly sinuous than either of those figured in these volumes. These people were evidently agriculturists, cultivating their land in terraces, and the wheat grown by them was of nearly the same quality as that now grown at the same height, and shows an advance upon the cultivation of pre-Roman times. Many querns for grinding this wheat have been found, but no ploughs or other agricultural implements, except some iron spuds, an iron-bound spade, and a reaping-hook; there are, however, some singular articles termed hippo-sandals,

the use of which appears doubtful, but which were either attached to the horses' feet, or to a primitive kind of cart without wheels.

The sheep were tall and slender resembling the St. Kilda breed, and the dogs were of all sizes, one being a Dachshund. The people apparently kept bees, as several perforated pieces of pottery are supposed to have been used as eolanders for straining honey, and we may reasonably suppose they made mead or some similar liquor: they also had spindle whorls, some of Kimmeridge shale and some of stone and bone, therefore they made their own cloth, but no specimen of the manufactured cloth has been found. The absence of all traces of religion is very curious, two or three flint implements are regarded by General Pitt-Rivers as having been used as amulets, but there are no images of Roman deities; none of those little figures denominated idols, in stone or terra-cotta; no emblems of sun, moon, or stars; no particular position or orientation of the dead, although most are buried in the crouching attitude common to savages; no stone circles or monoliths, in fact there seems nothing to show that they had any religion at all, which is strange considering the undoubted Roman intercourse which was maintained for centuries, the coins found dating from Caligula, A.D. 75, to Magnentius, A.D. 353. Among the most curious of the discoveries made are several hypocausts of singular construction, the use of which is not quite clear. They are usually square or oblong, cut in the solid chalk, with a trench round covered with flints, and a kind of oval basin at one end, in which it is conjectured the stokers stood to attend to the fire: many flints which have evidently been burnt are found in these hypocausts, and it is supposed these were heated in the furnace, and used as pot boilers. These hypocausts may perhaps have been the public cooking places of the village, or they may have been used after the manner of the Roman hypocausts for heating houses. A somewhat similar structure, but round in form, was described by Mr. Kinahan (in the *Journal of the Institute* for February, 1883) as existing at Cummer, County Wexford, where also pits resembling those at Woodcuts and Rotherley were found. Mr. Kinahan suggests that this circle with the pavement of burnt stones, may have been a place of sacrifice, but cannot understand why stones should be found mixed with the wood ashes. Was this a hypocaust similar to those described by General Pitt-Rivers? We remember having been shown a somewhat similar structure in Cornwall, which was said to have been used for burning the dead.

The elaborate system of drainage in these villages, and the change in that, and in the level of two Roman wells discovered, were pointed out by General Pitt-Rivers in the paper already referred to, as proving a difference in the rain-fall during the time these villages were occupied, and we need not therefore do more than draw attention to this very interesting and important point. The latest recorded excavations in these volumes are those carried out at Winklebury Camp and Hill, and in the adjoining barrows. Winklebury is one mile from Rotherley, and thirteen

from Salisbury: the camp is said to be that of Vespasian, but General Pitt-Rivers says it is certainly not of Roman construction. The finds here are chiefly pre-Roman of the Iron Age, the pottery is rougher, and the flint flakes and implements numerous. The barrows are British, and contain British pottery of several kinds, and bronze implements, but they are surrounded by Saxon graves, and secondary Saxon interments would seem to have taken place in some of the barrows. In the Saxon graves evidence is afforded of orientation of the body in burial. All the skeletons, with one exception, lie with the head to the west, facing north, in an extended position; and with some of them were interred iron knives and other curious articles in the same metal. On one skeleton was found a sort of double fibula of bronze discs coated with silver, and attached to a piece of wood and iron links, beneath which was found a piece of cloth. Some of the skeletons wore on the neck glass beads with spirals of different colours, the adder's bead of the Britons.

It is impossible in a notice of this kind to touch upon every point of interest presented in this valuable work. The reliable anthropological data afforded by it will be fully appreciated by all students of the "science of man." Three distinct peoples are brought before us: the tall brachycephalic men of the bronze age, buried in round barrows; the short dolichocephalic Romanised Britons, possibly and probably the descendants of the Neolithic folk of Thurnam's long barrows; and lastly the Saxons, "all contained within a radius of about three quarters of a mile." The relics, animal, vegetable, and mineral, works of art, and personal ornaments, and relative position of each, have been carefully tabulated, in order to facilitate reference, and the most minute and scientific measurements of the human and animal remains by Drs. Beddoe and Garson are given, all as General Pitt-Rivers is careful to inform us in the interests of truth, and not with the idea of establishing any pet theory. We cannot do better than conclude this notice in the words of the author: "A good deal of the rash and hasty generalisation of our time arises from the unreliability of the evidence upon which it is based." It is next to impossible to give a continuous narrative of any archaeological investigation that is entirely free from bias; undue stress will be laid upon facts that seem to have an important bearing upon theories that are current at the time, whilst others that might come to be considered of greater value afterwards are put in the background, or not recorded; and posterity is endowed with a legacy of error that can never be rectified. But when fulness and accuracy are made the chief subject of study, this evil is in a great measure avoided."

We rejoice to hear that General Pitt-Rivers intends to resume his investigations, and anticipate still more important results from future explorations.

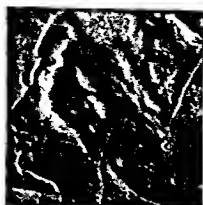
A. W. BUCKLAND.

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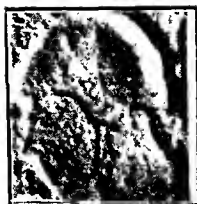
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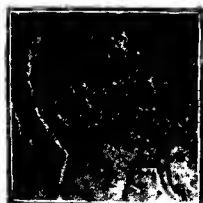
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PROFILES FROM THE EGYPTIAN MONUMENTS.

THE JOURNAL  
OF THE  
ANTHROPOLOGICAL INSTITUTE  
OF  
GREAT BRITAIN AND IRELAND.

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JUNE 12TH, 1888.

FRANCIS GALTON, Esq., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The following presents received since the last meeting were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From the AUTHOR.—Orion and Sirius. By James Bonwick, F.R.G.S.

From the STATE BOARD OF HEALTH OF MASSACHUSETTS.—Nineteenth Annual Report. 1887.

From the ROYAL SCOTTISH GEOGRAPHICAL SOCIETY.—The Scottish Geographical Magazine. Vol. iv. No. 6. June, 1888.

From the DEUTSCHE GESELLSCHAFT FÜR ANTHROPOLOGIE, ETHNOLOGIE, UND URGESCHICHTE.—Archiv für Anthropologie. Band xvii. Part 4. Correspondenz-Blatt. 1888. Nr. 5.

From the BATAVIAASCH GENOOTSCHAP VAN KUNSTEN EN WETENSCHAPPEN.—Tijdschrift voor Indische Taal-, Land- en Volkenkunde. Deel. xxxii, Aflevering 3.

From the INSTITUTION.—Journal of the Royal United Service Institution. No. 143.

- From the SOCIETY.—*Journal of the Society of Arts.* Nos. 1854, 1855.  
 — *Proceedings of the Society of Biblical Archæology.* Vol. x. Part 7.  
 — *Proceedings of the Royal Geographical Society.* Vol. x. No. 6. June, 1888.  
 — *Journal of the China Branch of the Royal Asiatic Society.* Vol. xxii. Nos. 3 and 4.  
 From the EDITOR.—*Nature.* Nos. 970, 971.  
 — *Science.* Nos. 276, 277.  
 — *Photographic Times.* Nos. 349, 350.  
 — *American Antiquarian.* Vol. x. No. 3.  
 — *Revue Scientifique.* Tome xli. Nos. 22, 23.  
 — *Revue d'Ethnographie.* Tom. vi. Nos. 5-6.  
 — *Bulletino di Paletnologia Italiana.* Tom. iv. N. 3 e 4.

The following paper was read by the author:—

REMARKS on MR. FLINDERS PETRIE'S COLLECTION of ETHNOGRAPHIC TYPES from the MONUMENTS of EGYPT.

By the Rev. HENRY GEORGE TOMKINS.

[WITH PLATES X AND XI.]

*List of Principal References in the following paper.*

Mr. Flinders Petrie's casts, on the Ethnological Staircase, British Museum.<sup>1</sup>

"Map and Memoirs of Palestine Exploration Fund;" and "Atlas of Africa." Gotha. Perthes, 1887.

Poole, R. Stuart, "Journ. Anthropol. Inst.," May, 1887.

Chabas, "Études sur l'Antiquité Historique." 2nd ed. Paris. 1873.

Maspero, "Hist. Anc. des Peuples de l'Orient." 4th ed. Paris. 1886.

Maspero, "De quelques navigations des Egyptiens," &c. ("Rev. historique," tom ix.)

Maspero, "La Syrie avant l'Invasion des Hebreux." Paris. 1887.

Maspero, "Papers on Karnak List of Palestine." ("Trans. Victoria Institute.")

De Lantsheere, "Hittites et Amorites." ("Rev. des Questions Scientifiques," Avril, 1887. Bruxelles.)

Lenormant, Fr., "Les Origines de l'histoire." Paris. 1880-4.

<sup>1</sup> Photographs from the casts may be obtained from Mr. Harman, photographer, Bromley, Kent. A set is in the Library of the Anthropological Institute.

Lieblein, "Der Handel des Landes Pun." (*"Zeitschr. f. Aeg. S."* 1886-7.)

Ebers, "Aegypten und die Bücher Mose's." Leipzig. 1868.

Brugsch, "Geog. Inschriften." Band. II. Leipzig. 1858.

Dümichen, "Die Flotte einer Aeg. Königin."

*Id.*, "Geschichte des alten Aegyptens." Berlin. 1879 (Oncken).

Meyer, "Geschichte des alten Aegyptens." Berlin. 1887.

Wiedemann, "Aegyptische Geschichte." Gotha. 1884.

Mariette, "Les Listes Geog. des Pylones de Karnak." Paris. 1875.

Lefebure, "Les Races connues des Egyptiens." (*"Annales du Musée Guimet,"* tom. i, p. 62. Paris. 1880.)

Conder, Capt. R.E., "Hittite Ethnology." (*"Journ. Anthropol. Inst.,"* November, 1887.)

Osburn, "Egypt's Testimony," &c., London. 1846.

Vigouroux, "Les Héthéens," &c. (*"Rev. des Questions hist.,"* vi<sup>me</sup> année. Paris. 1882.)

Neubauer, "La Geog. du Talmud." Paris. 1868.

Vivien de St. Martin, "Éclaircissements, &c., sur l'insc. d'Adulis." (*"J. Asiat."* October, 1863.)

Haig, Major-Gen., R.E., "A Journey through Yemen." (*"Proc Royal Geog. Soc.,"* August, 1887.)

Haig, Major-Gen., R.E., "Ch. Miss. Intelligencer." 1887.

Petrie and Tomkins, "Report" in vol. of Brit. Assoc. 1887. 439, *et seq.*

Tomkins, "Studies on the Times of Abraham." London. 1878.

*Id.* Papers on Karnak Lists and Geog. of N. Syria (in *"Trans. and Proc. S. Bib. Archæology."*)

Poole, R. Stuart, "Ethnology of Egypt." (*"Trans. Ethnol. Soc. of London."*)

Brugsch, "Die Altaegyptische Voelkertafel" (New Series, vol ii).

Neubauer, "Notes on the Race-types of the Jews." (*"Journ. Anthropol. Inst.,"* August 1885)

Jacobs, "On the Racial Characteristics of the Modern Jews." (*Ibid.*)

Lepsius, "Nubische Grammatik." Berlin. 1880.

THE valuable collection of casts and photographs submitted to the British Association by Mr. Flinders Petrie as typical examples of the Egyptian portraiture of their own nation and of the races with whom they were familiar may best be studied by first ascertaining the ethnological and topographical record which in most cases may best be found on the monuments themselves. This is the chief purpose of the paper which I now beg to submit.

My cordial thanks are due to Mr. Petrie and to Professors Sayce and Maspero for very valuable help in this examination.

Following the custom of the Egyptians themselves, I have classified our collection under the four heads of Westerns, Southern, Asiatics, and Egyptians, and in the order I have, for the sake of convenience, taken that of the four races in the tomb of Merenptah.




Since writing the brief and necessarily hasty paper which appeared as an appendix to the Report of the Committee of the British Association on this subject, I have seen the interesting communication of Mr. R. Stuart Poole to the Anthropological Institute and the discussion reported in its Journal (May, 1887). I ought in justice to myself to say that I had not heard of this until Prof. Sayce showed me the Journal at Oxford after I had written the paper which I am now reading. Whatever agreement, therefore, may be noticed between the views that I have here entertained and those previously expressed by Mr. Stuart Poole, Prof. Flower, and others, are the coincidences of entirely independent lines of inquiry. At the end, however, I must quote from this record, especially from the weighty words of Prof. Flower.

Adopting then this rough four-fold classification we have :—

(A.) First, the races of the African country to the west of Egypt, and those of the islands and maritime countries reckoned with them by the Egyptians.

The names found in our list are :—1. Tabennu ; 2. Hâ-neb-u ; 3. Lebu ; 4. Mashuash ; 5. Tsekuri ; 6. Shardana ; 7. Shakalsha ; 8. Tuirsha of the sea ; 9. Dardani ; 10. Pulista.


1. Tahennu, Casts 69, 70, 96 (? 71, 72, 82 to 85), photo. 779 (270, not in Mr. Harman's series). The *fair* people (compare "Japhet"), Taken is crystal (says Chabas), and the Tahennu are clear or bright-complexioned races of the west. Lefebure distinguishes them as the white men of Africa from the Tamehu, or fair men of the north ("Musée Guimet," i, 73).

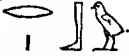
But this seems doubtful (Ebers, "Die Bücher Mose's," 109). It is very interesting to find in the Karnak List of the South, No. 87 (Maspero's correction) , AUSA, which I take to be AUSA, west of TAJURRA, and next to this No. 88, our name , which BRUGSCH reads "THEHENNU, Egyptian name for the MARMARIDES" ("Hist.," Eng. ed., i, 365). STERN has well observed that we find the TAHEN wearing a robe embroidered with the southern plant  ("Zeitschr.," 1883, 20).

Now south-east of the great stronghold of Magdala is a place marked in Perthes's map Tahin, and in Perthes's map is a stream, Tehen, tributary to the Takazze, which I would compare with Tehenut cited by Brugsch ("Zeitschr.," 1882, 34), who calls attention to the occurrence of this name in the south.

But I must not digress. Photo. 270, from Medinet Habu shows a front face with the long plaited tress of hair on each side so carefully trained and recurved that the face is set in an ornamental frame of the exact shape of an inverted lyre reaching as far down as the bottom of the square-cut beard.

The Taken-folk, as Egyptian mercenary troops, founded by a prætorian revolt the celebrated XXIInd dynasty to which Sheshank I (Shishak), the invader of Palestine, belonged (Wiedemann, "Geschichte," ii, 548; Stern, "Zeitschr.," 1883, 19).

2. Hā-neb-u,  The races of the north. The word *hā* means "behind," and so the north. Hā-nebu would designate the peoples of the isles of the Mediterranean and the coasts beyond, and, although applied in Ptolemaic times to the Greeks, the term was not so restricted at the time of the great conquests of the Theban kings (Leuormant, "Les Orig.," iii, 22), photo. 1. The term occurs as early as Sankhkara of the XIth dynasty (Chabas, "Études, &c.," 174). Our cast represents a woman's head of fine profile, with a long, wavy side lock, and abundant hair trained over the back. It is highly interesting as a typical profile.

3. Lebu,  Libyan. The Lebu very early figure as enemies and troublesome neighbours of Egypt, as subjects under the VIth dynasty, and on and off until they led the great invasion against Merenptah, and again coalesced in the attack of the coast peoples against Rameses III.

We have a cast of the Libyan chief taken captive by Rameses III, photo. 152, and Lebu 763, 765, 770, 771.

I think "the Lifayah, a tribe inhabiting the oasis of Ammon" (Rawlinson, "Her.," III, 124), retain the old name. Mr. R. G. Haliburton writes: "the Berbers of Morocco are divided into the Riffs and Susis; the first, light haired and large men, living in the mountains; the latter, smaller, darker, and generally nomadic. The people of North Africa were called *Libu* or *Ribu* on the monuments, and hence the word *Libyan*. But the Riffs are called *Riffi* or *Ribi*, hence *Libyan* is the same as *Riffian*." ("B. Assoc. Manchester Report," 1887, 908).

I think we may find Libyan captives of the date of Thothmes III in the light-complexioned, fair-haired, and blue-eyed brick-makers of the celebrated tomb of Rekhmara (photo. 781, 782).

If we miss their long side locks it is not surprising, since they are slaves employed in the lowest drudgery.

4. Mashauasha, , sometimes


Mashaua (omitting the last syllable) as Brugsch notices ("Geog.," ii, 80) *cf.* Missua on the coast east of Carthage (Spruner's Atlas). We find this people described as Mashauasha "of the land of the Tamahu." In photo. 154 we have the great chief of the Mashauasha from the row of royal captives, taken by Rameses III at Medinet Habu. His cord bears, as Brugsch says, the southern flower, from which he infers that his people dwelt in the south as well as in the north. But the same thing is true of the Kheta chief in the panels of Tel el Yehudieh (Brit. M.). If, however, there were Mashaua in the southern regions in early times, as well as Tahennu, may we not thus account for the name of the port, now so well known, Massawa on the Red Sea? We have more men of this remarkable race in photo. 164, 165. They are supposed to be the Maxyans (*Μάξυες*) of Herodotos, west of the River Triton, in the region of Tunis of these days. He says that they left a long lock on the right side only, and painted their bodies red, customs which are said still to continue among some tribes in that country.

It is well worth notice that we have the name Mashaua,


, in the Karnak List of North Syria, No.

282. Does not this mark the route of their emigration westwards? And among the Libyan leaders against Rameses III

we find Mashashar, , son of Kapûr,


. This seems to me a name similar to

Khetasar, Kauisar, &c., formed by apposition, and it may point out the ethnic affinity of these people. We have also the name

Mashaken, , in the same campaign.


"The Mashûashas," says Chabas, "were themselves Libyans, but formed a distinct tribe of considerable importance" ("Études," 242).

5. Tsakuri, Tsakkriu, 

, photo. 153, 168, 174-77, 178. These people have been identified with the Teukrians by Chabas ("Études, &c.," 288, XIXth dynasty, 42), Lenormant ("Les Orig.," iii, 137), Maspero ("Hist. Anc.," 4th ed., 267), &c. They wear kilts and a head-


dress similar in form to that of the Pulista, with whom they acted. Chabas says that the land army (in the attack on Rameses III) did not include the Tuirsha, nor Shardina, but only the peoples wearing the costumes characteristic of the Pulista, Tsakuri, Danauna, &c.

It is to be hoped that further light may be brought to bear on this important group. Dr. Max Müller, of Nürnberg, has promised further intelligence in his interesting remarks lately published in "Proc. S. B. A.," x, 147, *et seq.* It seems to me worthy of inquiry whether settlements of these Tsakuri people gave name to Ζούγαρ ("Ptol.," iv, 3, 40), and Ζυγρίς Κώμη ("Ptol.," iv, 5, 4), and were themselves the Ζυγρίται ("Ptol.," iv, 5, 22) of Libya. It is also worth notice that Ταύχειρα, or Τεύχειρα, now the ruined city Taurica, was an important place on the coast west of Cyrene.

6. Shairdana, Shardina, . The Shardina furnished highly trained soldiers


to the Egyptian army of Rameses II. They wore helmets with two horns, crested with a disk, and seem clearly to have been Sardinians (Chabas, "Études, &c.," 299). The objections of Perrot and Chipiez to the identification are well answered by Dr. Max Müller ("Proc. S. B. A.," 1888, 148). We have the chief captured by Rameses III in photo. 159, and others of the race, photos. 200, 207, 209-11, 212.

The island of Sardinia is full of interesting antiquities, including many Egyptian relics.

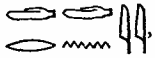
7. Shakalsha, or Shagalsha, .


We have the striking head of the chief in photo. 160, wearing a cylindrical cap, as of felt or cloth, bending backwards and bound with a fillet. These people are named with the Pulista, Tuirsha, Dânaui, and Uashasha, and are commonly taken for Sicilians, Σικελοί.

Prof. Maspero has well compared the name Shagalsha with Σαγαλασσός, an important city of Pisidia, now in ruins ("Hist.," 4th ed., 256, and ref.). Dr. Max Müller promises to prove that they were inhabitants of the south-west of Asia Minor. They were engaged against Merenptah and against Rameses III.

8. Tuirsha, , "Of the sea." The Tuirsha played a very important part, and their history has been treated with great care by Lenormant in the last part of his work, "Les Origines, &c.," 118, *et seq.* He sees in them, as Chabas and others had seen, the Τυρσηνοί, Etruscans, and argues the question learnedly and carefully. Dr. Birch was of this opinion.

See photo. 161. A face of fine profile; a close pointed cap, with wavy tassel hanging behind.

9. Dardani, , taken captive by Rameses II in his war against the Kheta alliance; generally regarded as Dardanians, leaders of the Trojan nations, afterwards succeeded by the Teukrians. Our heads, in photo. 11, 12, are bearded like the Tsakuri, and wear a close round skull-cap. Dr. Haigh compared the name of Durdun Dag, the mountain range north-west of northern Syria. I think this remark should not be overlooked. ("Zeitschr.," 1874, 70). And I find a Durdun Dag south of Membij, near the Euphrates, in Kiepert's map.

10. Pulista, . This name has been naturally identified with the פלשתים of the Bible, a word, which, in the Greek of the LXX, Φυλιστιείμ, comes close to the Egyptian. Chabas denied this, but it is accepted by Maspero ("Hist. Anc.," 4th ed., 312), Lenormant ("Hist. Anc.," 9th ed., ii, 305), and others who consider the Pulista as Pelasgians of Crete by whom the southern coast-land of Canaan was colonised under the protectorate of Egypt. In photos. 181-2, 202-3, 213-4, we have very good examples of this warlike and seafaring people with their remarkable head-dress. Among them we find two front faces. These are so infrequent in Egyptian tableaux that they ought always to be carefully noticed. Their head-gear agrees in form with that of the Tsakuri and the Dânauna. I have not noticed the retracted explanation of these names by Brugsch ("Hist.," Eng. tr., ii, 124), who sought these tribes in obscure quarters remote and inland. He was answered by Robiou ("Rec. de Travaux," ii, 58), and very lately by Dr. Max Müller of Nürnberg ("Proc. S. B. A.," as quoted above). But I must hasten on to the next division, deeply interesting as these western and northern names certainly are, for they involve important questions which have not yet attracted in England the attention they deserve.

(B.) Southern. Under this division we have very various and interesting types.

The southern men of the representative four races in the tombs of Seti I, Merenptah, and Rameses III are in each case black, but of very various character.

In that of Seti our photograph (776) gives the sad remains of the painting which we have in Lepsius, and in Brugsch ("Geog. Inschr.," ii). The handsome red sash is identical with that worn by the men of Amam (photo. 786), of whom we shall speak, a highly civilised race with well-formed figures and faces.

The southern man of Merenptah again has a very good profile, intelligent look, and well-formed shoulders. These remind us that handsome races of high breed are to be found in Nubia and Abyssinia.

But the two specimens in the tomb of Rameses III are in various degrees Nigritic, with receding foreheads and thick protruding lips. These features are found in photos. 787-8, and, with other highly contrasted examples, come before us under the heads of Kush and Pân.

We are here led straight to the great South List of Thothmes III at Karnak, and this has involved me in very laborious study. For this highly interesting and extended list includes Nubia, Abyssinia, the Soudan, Somâli-land, and much beside, now becoming more and more interesting to England and to Italy, and yearly illustrated by additional research. Here the splendid atlas of Africa, of which a second edition has lately been published, by Perthes of Gotha, serves us in good stead.





I. , כוש, Kush. For the Egyptians Kush meant in a general way the Æthiopia of Africa. For us a vast and important field of enquiry is indicated by the term, but I must not enter on it now.

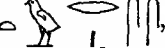
Photo. 150 shows how marred is the typical head of the great chief captured by Rameses III (Leps. "Denkm.," iii, 209, Brugsch, "G. Ins.," taf. vii). It is thoroughly Nigritic in its thick features. But such a face is sometimes dark red, as in photo. 789, and many in Mr. Petrie's list ("B. Assoc. Report," 1887, 447, &c.).


Belonging to Kush we have many subordinate local names.








(a.) Such as the chief of  (No. 20 in the "Karnak South List," photo. 155) with rude Nigritic visage, but red skin.


Mariette finds this at Zûlla (Adulis) at the head of what we call Annesley Bay. But to me Toraf in Samen, a district of Abyssinia, is more likely, unless the final  which is given by Mariette indicates the name Terefat, north of Abyssinia. But I prefer Toraf.

(b.) , Deshfu, which Mariette identifies with Tasfay in Agame, east of Tigré, a district of Abyssinia ("South List," 29, photo. 118).

(c.) , Turses (photo. 153). Represented by a Negro chief in the great row of captives at Medinet Habû.


I am much tempted to take this, with Lenormant ("Hist. Anc.," 9th ed., ii, 202), as a mistake for , which we


find in the "South List," No. 12, and in a list of Seti I. This very closely resembles Gershes, near Merieh below Derr in Nubia, mentioned in despatches of March, 1888, as attacked by rebels. In this case the next-mentioned place  would be Jebel Ollaki a little lower. The three peoples , , and , are found on a rock-tablet of Amenhotep III near Assuan (Brugsch, "Geog.," ii, 8), and taking all the indications I think   may most likely be the present Djarsu Galla, , Alga, in the Walega county; and next we come to—

(d.) , Arm, whose people present themselves before Queen Hashepsu (Hatasu), and whence Rameses III brought very intelligent Negroes of Kush, with those of Taraf (mentioned above) for charioteers, equerries, and bearers of the royal umbrella (Chabas, "Études, &c.," 136). We have the chief of this region in photo. 87, and the name in the "South List," No. 11, and in lists of Seti I, Rameses II, and Taharqa.


I have thought that this name corresponds with the Orma, south-west of Abyssinia. Since forming this opinion I have read the highly interesting article of Prof. Maspero, "Les Ilim," ("Recueil de Trav.," viii, 84). It still seems to me that Orma is the true identification. At Deir-el-Bahari the inhabitants of Arma (as Mariette says) present themselves before the Queen together with the people of Pûn, and with the same characteristics (Cf. Lieblein, "Zeitschr.," 1885, 128). Our chief of Arma is of kindred type to the men of Pûn.

Perhaps the name Orma (Oroma, Perthes) may be derived from Nubian *urum*, "black" ("Zeit.," 1887, 93).

(e.) , Awaüa. This name we find in photo. 787, with Negroes leading those illustrious oxen, whose long horns are tipped with ornaments in the shape of human hands. This name is surely to be referred to the present Awawa district on the Blue Nile, in the south-west of Abyssinia, and north-east of the Orma. (Keith Johnston's "Atlas.") The photograph was taken in the celebrated tomb of Hui, of the XVIIIth dynasty, from which we have a continuous series, and additional separate portions of the wall-paintings among them.

(f.) , Mām. A very ancient name (Brugsch, "Zeitschr.," 1882, 31). The district, says Brugsch, is in the neighbourhood of Primis (Ibrim) on the Nile, higher than Derr. It was harried

for slaves as early as the VIth dynasty. The name Memme, between Semneh and Soleb, may preserve that of this region of Mām.



(g.) , Khāma. The ancient name of Soleb on the


Nile in Nubia, where there is a celebrated temple of Thothmes III. Here we have the chief of Khāma making his offering with the commander of Kush and another.

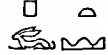


One of the most important figures in this tomb is that of an Æthiopian Queen, in a chariot drawn by two oxen, white, pied or clouded with black, a kind still found in Abyssinia, as Mr. Houghton remarks in the "*Bible Educator*," i, 365 (photo. 788). The Queen's complexion is reddish brown. Her face is now injured, but from the engravings it appears to have been well formed with regular profile. In these pictures Hui is receiving the subjects of his province, and, as Mariette says, "People of every shade of complexion and of every race present themselves before him. Some are Negroes with distinctive features strongly marked; others are of the Negro type, but brown in colour; others, also copper-coloured, have more northerly features; there are also men of a red tint like the Egyptians, mingled with white-complexioned women." ("*Mons. of Upper Egypt*," 225.) Mr. Petrie's notes of colour are most carefully discriminated and very valuable. It is very curious to find in the paintings blacks with red hair. It is hard to suppose that this does not prove red hair in the original, and it reminds us of a strange race in Nubia, whom Miss Edwards describes as black in complexion, but with "light blue eyes and frizzy red hair," at Derr, the capital of Nubia; and higher up "fair" families, whose hideous light hair and blue eyes (grafted on brown-black skins) date back to Bosnian forefathers of 300 years ago. These people are "immensely proud of their alien blood, and think themselves quite beautiful" ("*A Thousand Miles on the Nile*," Tauchnitz ed., ii, 21, 140). Now I think there must have been red-haired blacks, and perhaps blonde-haired, in old Pharaonic days. As to blue eyes, in the painting, we have grey-eyed blacks, but not (I think) with red hair. In photo. 790 we have five negroes on ship-board of whom three are black with red hair, dotted with black (? "frizzy red hair,") and two are red-skinned with yellow hair. Apart from blue eyes, however, we must take into account the dyeing of hair, and General Haig has kindly written to me: "I observed that you remark upon the curious fact of some of the Pûn races being depicted with *red* hair, or *brown*, which there seems at first no way of accounting for. The Somâlis constantly dye their hair these colours, I think, by plastering it with lime. This peculiarity strikes one much on

arriving at Aden, where there are some thousands of these people. The hair is frizzly, and no-doubt black by nature, and I suppose the colours mentioned are esteemed a beauty among them and obtained as described."

The custom described by General Haig may be as old as the use of antimony for the eyes, or henna for red staining. I think caustic alkali has been used in this country for brightening the colour of dark brown hair. Of course it will not account for the light-blue eyes of Miss Edwards' hideous dandies. Mr. Villiers Stuart says that he has "seen red-haired mummies in the crocodile-caverns of Abou-faïda." ("The Funereal Tent of an Eg. Queen," &c., 121). Mr. Petrie suggests that this hair may be white stained in some way.

(h.) . I almost think this may be equivalent to , Heha, the land beyond the Egyptian frontier at Semneh ("Zeit.," 1874, 112), see Meyer's map ("Geschichte").


(i.) , Adal (photo. 116). "South List," No. 2. Mariette, after Dr. Birch, considers this certainly the ancient *Ἀδουλις*, which was doubtless, says he, the base of operations of the army of Thothmes, and his port of supply. It should be noticed, however, that the whole district inland of the gulf of Tajurra, far south, is now called Adal, which is the very name in question. It seems, therefore, that the name denotes a very large province which appears to bring us into our next general division, namely:—

II. . Pûn. The people are called Pûn, .  (Chabas "Études," &c., 163), Pûnites. This region is full of interest and to-day attracts general attraction. The Egyptians under the XIth dynasty sent an expedition thither in the time of Sankhkarâ, commanded by Hannu (perhaps a Phœnician like his namesake of the *Periplus*). The celebrated voyage of the five ships sent by Queen Hashepsu has been given from the relief sculptures of her splendid structure at Deir-el-Bahari by Dr. Dümichen, who, in his later history, gives reasons for believing that the land of Pûn lay on both sides of the Red Sea, and farther south in Somâli-land, and adduces monumental evidence that the landing-place lay on the Arabian coast. ("Gesch. d. Alten Ægyptens," in Oncken's series, 102, 119-22).

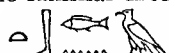
Mr. Petrie has happily provided in his collection of casts a

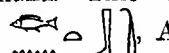

good series of examples of the Pûnite physiognomy from reliefs of Thothmes III at Karnak, and a very interesting tableau of Hor-em-heb, the last king of the same dynasty.

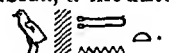

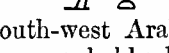
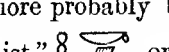
First, we will take the selection of eighteen heads of captive chiefs from the great "South List of Karnak," which Mr. Petrie has carefully marked according to their position on the wall. Some of the names are so well identified as to give us our general bearings.

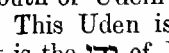
, Annena. 36 and 210 "South List." *'Arrivé*

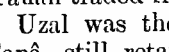
(Mariette). Spruner marks it inland of the gulf of Tajurra and the modern name Alulli or Alluli there corresponds with the familiar interchange of *l* for *n*.

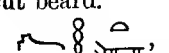
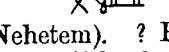
, Debanti. 209 "South List." In Perthes' map we find Debenet north of the gulf of Tajurra, and Debeni inland. This will exactly give us the ancient name.


, Antebeth. 37 and 209 "South List," but 37 reads , Anbeth, which possibly we may find in Abida, a mountain in the Debeni region (Kiepert's map).

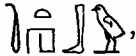



, Prof. Maspero recognises in this No. 64 "South List," , Udent, or Uden, and here, I think, we are in South-west Arabia, for Uden seems to be modern Udein, the more probably because in the name next before in the "South List," , or , Hakfu, I recognise modern Hâkif, south of Udein (Kiepert).

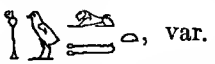


This Uden is a highly important place if (as seems likely) it is the , of Ezekiel xxvii, 19, which reads thus: "Uden and Yauan traded from Uzal with thy wares, &c."

Uzal was the most ancient name of the capital of Yemen, Sanâ, still retained (says Lenormant) as Auzal. , here has nothing to do with the Ionians but is Yaw or Yawan, a city of Yemen (Gesenius). Sir Robert Sale says that this (Jaw) was the ancient name of the chief city of the province of Yamâma in Central Arabia ("Koran, Intr.," p. 4). We have the chief of Uden in photo. 100, a Pûnite well marked, with short square cut beard.


, ("South List," 62. Maspero's corr. , Nehetem). ? Possibly Lhedu on the south route from Berbera in Somâliland. (Kiepert's map).





, "South List," 61. Shatsitem. This may, perhaps be compared with Setitte River in Abyssinia.


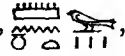
, "South List," 60. Mariette reads  for . Mr. Petrie's reading may give us Dadab, north of Harar in Somâli-land (Perthes). But a list of Seti I gives .

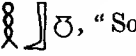


, var.  for , "South List," 59, *cf.* 195. Uncertain, but I think if we read Ulthet we may have Wenthit in Shoa.

, var. , "South List," 57. Metu or Methu, var. Memthu, possibly Metta in Shoa.





, "South List," 198. Amhimru. Perhaps Emmamret, a mountain in Shoa. (Kiepert's map).



, "South List," 197. Ahûl, or Ahûr. Prof Maspero compares 55, , var. , which Mariette identifies with the name from which the Greeks formed their *Αυαλίτης*. This is very good, and it is curious to find the name in Kiepert's map as Awal in the coast-district near Berbera, where we also find another name identical with , viz., Wuhur, a mountain range inland of this coast-district. There is also a Mount Awalu east of Shoa.



, "South List," 182. Amubes. This may well be Ambos between the Avalitic Gulf (Tajurra) and the port of Mandao which is probably the next place in the list, , the *Μόνδου ἐμπόριον* of Ptolemy (iv, 7, 39). See Perthes' map. This name we shall meet with presently in Mr. Petrie's list (photo. 114).











, "South List," 181. Hebnu, or (as Brugsch reads it) Heben. Clearly, I think, the region called Heban in Somâli-land, south of the port of Mandao. I would connect this name with  ebony, , the ebony tree, and Hebrew *הבנים*, ebony (Ezek., xxvii, 15), among the choicest



products of Pûn. See M. Loret's interesting article in "*Recueil de Travaux*," vi, 125.

 , "South List," 180. Asteses. This reminds me forcibly of the great river-names of this part of Africa. Astaboras (now Atbara), Astapus, and Astasobas (of which the latter element remains in Sobat). Brugsch traces this in Nubian *essi*, "water." Perhaps  may be ; Meroitic "good, beautiful" ("Zeit.," 1887, 93, 94).

 , "South List," 179. Aar or Aal. Perhaps Ala, a district south of Harar in Somâli-land, and in the same part of the country as Heban (Perthes' map). This seems likely enough.

 , "South List," 178. Thenas. Unknown.

 , "South List," 184. Uden-t. On this Brugsch notes: "Vedan, of the Bible, yielded balsam and the stone Hemak" ("Hist.," Eng. tr., i, 366). Hemak,    ,  , was a "dark red gem" (Pierret, "Voc.," 359). We have already spoken of the Biblical Vedan or Uden in reference to No. 64 of the "South List,"  , which I suppose to refer to Udein in Yemen. But Lenormant has taken the Uden of Ezekiel as Waddan, between Mecca and Medina, on the caravan route from Yemen to Tyre. However this may be, it seems to me that the Uden we have now before us may be Widan, an Arabian port on the Red Sea. For this name does not seem to be a repetition of the other, but a separate name and place.

 , "South List," 80 and 183. Mendu seems, as I

have said, to be the port Mandao on the Somâli coast opposite to Aden, and noted as an emporium by Ptolemy.

If now we carefully examine this set of countenances certain common characteristics strike us as forming a "composite" well-marked type. It is an intelligent bright countenance with straight nose but protrusive lower jaw, and rather sharp chin. If we turn to the excellent reliefs of Deir-el-Bahari, the people of Pûn have quite the same faces, degenerating in the lower or older faces, and in the deformed queen, into a screwed-up look,

with deep lines from nostril to mouth, which we see in 111 and 112 in our series.

On the other hand, the fine tableau of Hor-em-heb, shows us the *noblesse* of Pûn of the best lineage with the higher traits developed and refined (photos. 5 and 6-8 and 743).

The most interesting issues, for better or for worse, of the race of Pûn seem to me to come out in the persons of three royal generations in the great XVIIIth dynasty. The personages of that illustrious line show no traits of Pûnite physique down to Thothmes IV, a man of apparently small frame and delicate features. His wife, Mût-em-uâ, however, is apparently a Pûnite lady with straight nose and protrusive jaws, but not an unrefined or unpleasing aspect (see her profile in Rosellini's plates). Her son, Amenhotep III, a very distinguished Pharaoh, inherits his mother's visage, not his father's. The similarity in Rosellini's profiles is very remarkable, and the fine and artistic head, in the British Museum, cut with masterly decision, shows exactly the same type and is highly similar to the faces of the Pûnite princes in Hor-em-heb's procession. The head rests proudly on a well-lifted neck, as we see in those slender well-grown nobles. Now the wife of Amenhotep III was the celebrated Queen Tiia (𓏏𓏏𓏏), about whom so much has been written. Prof. Maspero has dissipated some fanciful conjectures as to her family and name and rosy complexion ("Rec. de Tr.," iii, 27; "Hist.," 4th ed., 210). Her profile is regular, delicate, and pleasing. But her son, Amenhotep IV, the celebrated Khu-en-aten (photo. 610), has not the least resemblance to his well-favoured mother. His strange idiotic-looking face, on the other hand, is a caricature of the protrusive jaws and general physiognomic cast of the Pûnites; and if we attentively regard his father's face in comparison with that of his grandmother I think we are at no loss to divine the pedigree of the misshapen countenance. The "fittest" and best of Pûn illustrates itself in the masterly sculpture of Amenhotep III in the British Museum, while the son, Khu-en-aten, presents a grotesque instance of survival of the unfittest. I fancy that the ill-proportioned weak and corpulent figure may be owing to that morbid development which produced the monstrous deformity of the unwieldy Queen of Pûn. And the beams of light from the sun-disk *aten*, terminating in human hands, may perhaps be connected with the symbolism of the hands which ornament the long horns of the oxen brought from the same region.

Since writing the last paragraphs I have hit upon Dr. Birch's important article in the "Archæological Journal," 1851, 396, "On a remarkable object of the reign of Amenophis III," and there I find it directly stated that the Queen of Thothmes IV

was an Æthiopian. He refers to Wilkinson's "Mann. and Cust.," i, 60. This must be the passage in the new edition, i, 42, where Sir G. Wilkinson writes of Amenhotep III: "The features of this monarch cannot fail to strike every one who examined the portraits of the Egyptian kings, having more in common with the negro than those of any other Pharaoh; but it is difficult to say whether it was accidental, or in consequence of his mother having been of Ethiopian origin." In this audience I need not comment on the odd word "accidental," but I think all will agree that for "Negro" we must substitute the utterly different term "Pûnite." It is, moreover, very important to notice that the aten-worship had set in under Amenhotep III, or perhaps even in his father's time, and that the queen-mother, Mût-em-uā, was highly honoured and influential.

Probably this cultus may be traced back among the Kushites in Arabia and eastwards, but I have no time to follow this, being chiefly engaged in tracing physical characteristics.

As a very pretty "modern instance" of this cast of countenance we have here a good woodcut of a young Abyssinian girl ("Ch. M. Gleaner," Ap., 1887).

General Haig writes to me about the Somâlis:—"Their features are just as you describe, 'straight, good, and regular.'"

The subject of Pûn in relation to Egypt is most attractive. The Egyptians derived thence their greatest gods and their divine *bennu*, phoenix; and the afterglow of their golden age lingered over those terraced mountains of "Araby the blest."


There is a point that struck me in this connection. The beards of the Pûnite *noblesse* are those traditionally assigned in Egypt to the gods. These are best seen in Hor-em-heb's tableau. The Osirid deceased wore this beard in Egypt, but here we have it on living men. The same appears on the commander of a *corps d'élite* in Queen Hatasu's service, and their profiles make me think they are a Pûnite body-guard. As late as Rameses II we find the same beard on functionaries bearing the sacred bark of Amen. (Meyer, "Geschichte," 217, 257.)

But the squared artificial beard adopted by the Pharaohs also derives itself from Pûn, where we see it on many of the heads of chieftains (photos. 100, 110, 116, &c.).

These are some of the things that make the old tradition of Horus and his followers look so historical.


We must now return to our topography, which has led us chiefly through Abyssinia, the Soudan, and the Somâli-land on the African side of the Red Sea, and east and south of the Straits of Bab-el-Mandeb. But I think we have also been drawn into South-west Arabia, which has in long ages been dominated by the same ruling races.

III. The Asiatics. Our third great division brings us into Northern Arabia, the land of the upper Euphrates, Northern Syria, and Palestine, and so to the eastern frontier of the Delta of Egypt.

1. , Menti of Sati. "Bedâwin of

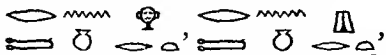
Sinai, Palestine, and the Hauran," says Prof. Maspero. The term was applied to the hordes who invaded Egypt under the Hyksôs (Maspero, "Hist.," 4th ed., 164). I have sometimes thought it worth enquiry whether these Sati-u (or Sitiou, as M. Maspero vocalizes the name) are to be connected with the Suti, the bow-bearing desert-folk of whom Fried. Delitzsch writes ("Wo lag das Paradies?" 235).

We have good examples of these Menti-folk in our photographs 95, 96. They are strong-looking men with large blunt noses and thick pointed beards, wearing a skull-cap which is in the one case ornamented by a zig-zag line, in the other bound with a fillet. They have some amulet hung round their necks. They are very different from Shasu, and from Amorites, and Jews, and have a very masterful cast of countenance

2. , Shasu. Arabs. The word seems to mean plunderers (from שָׁשׁוּ). We hear of them from the Egyptian eastern wall of defence up to Northern Syria.

They were very formidable, not only as nomadic hordes, but behind walls, for the fortress of Kanāna was defended against Seti I by the Shasu. We have their visages with various head-gear in photographs 40, 42-3, 46-7, 94, and 47 is a front face. Many wear a cap of the old orthodox "fez" shape (like a drum-case) with a fringe at the end; others a head-dress like a flat scotch bonnet, which we may compare with a very similar bonnet worn by one of the figures on a celebrated seal-cylinder ("Studies on the Times of Abraham," pl. iii, fig. 1).

Our Shasu are sharp-featured, with rather receding foreheads. Osburn declares that "according to the coloured designs in the east caves of Ipsambul, the complexion of the Zuzim" (he means Shasu) "was sallow, like that of the modern inhabitants of Syria, the eyes were blue, and the hair, eyebrows, and beard red" ("Egypt's Testimony," &c., 123).

3. , higher and lower Rutenu. Rutenu is a very important designation applied for ages to the people of Syria in an extended sense, and made to include those of Mesopotamia. A large number of our photographs will really come into this category, but we have them marked under local names.


We will first take those which resemble the well-known processions of tribute bearers of marked Semitic type, whose splendid embroidered dresses wind spirally round their figures. I think we may well call them, with Lenormant, Aramæans. From Lûqsor Mr. Petrie has brought some excellent examples of the time of Rameses II in Nos. 236, 239, &c., and especially the highly interesting heads 238 and 240. 238 is admirably sculptured and most life-like, of a high and refined type in its own cast, the subtle and courteous expression strongly contrasted with that despotic force which marks the Assyrian.

But Brugsch has rightly compared the dress with the similar vesture of the Assyrian nobles ("Geog." ii, taf. ii), and it is highly probable that we here see the style of that "robe of Shinar" (Jos. vii, 21, **אֲדָרֶת שִׁנְעָר**), which stirred the cupidity of Achan. Whatever may be the exact distinction of higher from lower Rutenu, we know that the former included the three great fastnesses Anaukas, Ianua, and Hur-en-qar, which were taken by Thothmes III. There is great reason, I think, to place these on, or near, the Euphrates. We have among our photographs several of the defenders of Ianua (78-81) against Seti I, and here are some front faces, with broad, rounded beards, to compare with the profiles. These faces differ, however, sensibly from the last, of whom I have spoken, and belong to the Khal-u of Syria, whom we will mention presently.

The Rutenu of this series of scenes, on the north side of the great hall of Seti I at Karnak (Nos. 69, 73, 74, 75) are exceedingly different from the former series, and, (although inscribed as Rutenu), must be akin to the Hittites. They may well be compared with 189, 190, who are true Hittites of the Orontes valley, with their hair in three thick tails, two of which set the face in a frame of the shape of a Jew's harp.

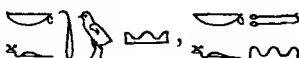
Women of the Rutenu wore the flounced dresses so familiar on the Babylonian seal-cylinders.

The ordinary "coats, and hats, and hosen" of this people may be seen in Lepsius, or in Dr. Birch's edition of "Wilkinson's Ancient Egyptians" (vol. ii) from the paintings in the celebrated tomb of Rekhmara at Thebes, and an excellent coloured plate in Meyer's "Geschichte" (in Oncken's series) gives the details of the magnificent robes to which I have above referred, as the full dress of the nobles.

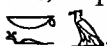
5. , Khal. This word denoted Northern Syria

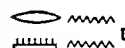
in a restricted sense. It seems to me to be found in the name of the river Khalos, and in Khalkis on that river, and in Khalvan (Aleppo), Khalebu of the Egyptian lists. The people

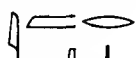
called by this name were Semitic, and seem to have belonged to the Rutenu.

6. , Keft. This is Phœnicia, and

is familiar in the Biblical name Kapht-or, Greater Phœnicia, as we speak of "Greater Britain." It is very interesting to find to-day Karkafta on the coast north of Ruad (ancient Arvad), and Keftin in the Orontes country, and in the Lebanon. In classic lore, Kêpheus stands for Keft. We have the name in the form

, Kefti, in the tomb of Rekhmara, where their long procession of tribute-bearers may be compared with that of their kindred-race of Pûn in the south, who are painted of darker brown complexion, but whose figures and dress are very similar. They wear alike kilts of richly striped and variegated colours, and the Keft people have handsome sashes with fringed ends, and their hair, which falls in long tresses in front of each shoulder and behind the back, is crested on the top of the head, with little spiral curls of some kind. They have no beards. Their faces are of a refined type, and not aquiline in cast. Mr. Petrie describes the chief of Keft as of yellow complexion, with black eyes, and light brown hair (but the colour has "scaled away"). We want further knowledge of these very interesting people.

7. , Lemeuen, photos. 90-3. This name was read as Armenia, but it is generally accepted at present as Lebanon. In a great tableaux of Seti I, the people of this region are seen felling pine-trees in their forests. They wear long robes and capes. The Lebanon was, of course, an eagerly coveted district from age to age.

8. , Amar, אמרי, the Amorite.

Among the great royal heads of Medinet Habû is the chief of the Amorites, next to the King of the Kheta, and here we find proof of the fidelity of Egyptian artists, for the same chief is pictured by a different hand in one of those beautiful panels in relief brought by the Rev. Greville J. Chester from Tel el Yehudieh, near Heliopolis. Yet the identity of the strongly marked features is manifest, and the beard can be easily traced where it has been broken off ("Studies on the Times of Abraham," pl. vi, figs. A and B). Mr. Petrie describes those in "the fort of Amar," as having "skin light red, rather pinker than flesh-colour." Osburn writes ("Eg. Test.," 129): "The personal appearance of the Amorites resembles a good deal that

of the Zuzim (a mistake for Shasu); the complexion is sallow, the eyes blue, the eyebrows and beard red, the hair so much darker, from exposure and other causes, as to be painted black. The features were regular, the nose perhaps scarcely so prominent as among the Zuzim" (Shasu).

The Amorites came, I have always believed, from the plain of the Euphrates, whatever their original seat, and Prof. Sayce has well pointed to Beth-ammaris and Ap-ammaris, west of the Euphrates, as preserving their name, which had a chief halting place at Gar-meri-su, the region of Damascus.

A tribe of them were called Yebûsi, and had their stronghold where David drove them out, or at least put them down; and here, as elsewhere, they were dove-tailed with the Hittite in a very remarkable way. This was true at Hebron, Yebus, Tabor, Megiddo, Kadesh on Orontes, and doubtless these are merely examples; and this fact is as clear in the Bible as out of it. The Gibeonites were also Amorites (2 Sam., xxi, 2), and Khivvites. I believe the Anakim were a ruling clan of the Amorites. This opinion results from a careful study of all the references in scripture, and I have pointed out that Arba' appears to be a numerical symbol of a Chaldæan god ("Times of Abraham," 102).

Mr. Petrie has given us a good series of Amorites (photos. 146-9, 157, &c.), of different dates, but all of the same type, showing a handsome and regular profile of sub-aquiline cast, the nose continuing the line of the sloping forehead (146-8 are very good). The cheek-bones are high, the faces have a decided and martial expression and look like those of tall strong men, as we know them to have been. They wear long robes and capes, like most Syrians of those times. On the highest tower of the citadel of "Dapûr in the land of Amar" (Tabor), is a remarkable standard hoisted, a shield pierced by three arrows, with a fourth separate arrow above the shield.

There is one important passage in which the Amorite religion is expressly identified with the Phœnician Baal-worship which Ahab learned from Jezebel, "according to all things as did the Amorites," &c. (1 Kings, xxi, 26).

Much more has to be said about this great people of the old world, but time fails, and we must pass on to their great ally.

9. ☉. Kheta. חת, i.e., the race of the Hittites.

I cannot hold with Chabas and Lenormant that there is no true connection between the Kheta of Egyptian history (Hittites of the north) and the חת whose people were settled at Hebron. On the other hand I believe with de Rougé, Maspero, Sayce, and others that they were one nation. Perhaps the conjecture is

right that the Egyptians called the northern Kheta "the great people of the Kheta" to distinguish them from the small offshoot in the south.

M. de Lantsheere has summed up the historic evidence in the following terms ("Revue des Questions Historiques," Avril, 1887): "From all this results for me the conviction that we ought not to make two distinct races of the Hittites of the north and the Hittites of the south. This distinction has always appeared to me scarcely natural, and seems to me to be invented to reconcile the biblical text which makes Heth a son of Canaan on the one part with the ethnographic data furnished by the Egyptian and Hittite monuments on the other.

"May we not admit here an explanation analogous to that which we give to the enrolling of Elam among the sons of Shem? Elam is certainly a son of Shem. But the Elamites, at least the first basis of the population, are very likely not Semitic.

"Let us reverse the explanation. Heth is certainly a son of Canaan; the tribes come down from the Amanus, who occupied his land and bore in the upshot his name, are very likely neither Canaanites nor Semites. Where is the contradiction?

"The name of Hittites has been applied to the second stratum of population as to the first, just as they have called the Germans Allemands, the Italians Italians, extending to the whole country the name of the first people known there.

"On this hypothesis the invasion of the Alarodian tribes, if we like to call them so, who fused themselves with the Canaanite Hittites, will have been relatively recent enough. The Assyrians and Egyptians would have extended to the former the name of the latter, the only thing that has survived their disappearance. The Amorites, on the contrary, will have kept with their name a certain proper existence; mixed with the Hittite-Alarodians in the land of Amar in the neighbourhood of Kadesh, they will have descended with them into Palestine. Thence their well known association. This explains also the Semitic-Canaanite names of Kadesh, Hamath, &c." M. de Lantsheere then refers to the very different personal appearance of the united defenders of Kadesh.

A similar case has struck me in illustration, namely that of Cyprus as explained by Lenormant ("Les Orig.," iii, 50). Kition being the great centre of commerce of the Phœnicians in Cyprus (he says), it is quite natural that they extended the name to the entire island, that they called not only their own colonists of Kitium Kittim, but the aboriginal Cypriote population. This is a repetition of the case of Elam.

It seems to me moreover, that our gallery of heads establishes the fact that the name Ruten was extended to people utterly dissimilar to the high-bred Semitic race, and quite like the familiar Kheta of the Egyptian monuments. I think M. de Lantsheere's way of putting the matter is worthy of great attention.

The facial characteristics of the Kheta are very marked and interesting. They have a great protrusiveness of the central part of the countenance which is most marked in the King "taken alive" by Râmeses III, and figured in the row of royal captives at Medinet Habû. Our cast gives us a far better notion than the drawing in Lepsius or Brugsch, where the face is much tamed and refined. Happily two Hittite reliefs at Merash, photographed by my friend Dr. Gwyther, give an excellent comparison, showing in two faces out of three a very coarse version of this profile. The relief panel of a Hittite prince, and another of a Hittite princess, in the British Museum, from Tel el Yehudiyeh, engraved in my "Studies on the Times of Abraham," show the same formation of the face in a more agreeable version.

In Barker's "Lares and Penates," p. 203, is a very interesting woodcut of a terra-cotta head found at Tarsus, which is surely that of a Hittite, as Dr. Birch remarked. The comparison with the Huns may be very appropriate, and the whole context is well worthy of attention.

Prof. Sayce has identified the Hittites with the "White Syrians" of Strabo as contrasted with "the Black Syrians or Semitic Aramaeans, east of the Amanus" (Her. 5). The intention of the Egyptian artists seems to have been to give them as people of yellowish complexion, and the Hittite lady from Tel el Yehudieh is fair. The chief of Kadesh on Orontes in Tomb 34, Thebes, is white. Their mode of wearing the hair, which was dark and straight, was this: it was trained into three divisions or tails, one over each shoulder and one down the back, and each, when carefully arranged, ended in a spiral turn. The savages of Huleh-water who captured "Rob Roy" in his canoe have three plaited tails in a similar style (woodcut, "Rob Roy on the Jordan," 241), and one face is of the same general cast.

I will also mention that the high head-dress of the Hittite King Kheta-sar, whose daughter Râmeses II married, is to be seen on the head of a Kurdish shepherd in the frontispiece of one of the volumes of Capt. Cameron's interesting book "Our Future Highway."

There are some heads among the series of Kheta which require special mention. For instance (from Luqsor) the

singular head and face No. 262, and the ugly profile 222, exceedingly like the two heads at Merash before mentioned, 230, still coarser, and 215-16. In 228-9 (allies of the Kheta) we have a very curious casque with a single horn in front, which suggests comparison with the Shârdana.

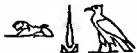
In Rosellini's plates are many heads which would suggest that the Hittites wore moustaches, but the good examples from the Ramesseum Nos. 143-4-5, will show that the artist intended to represent strong facial lines from above the nostrils to below the corners of the mouth. Mr. Petrie's series of Hittite heads, compared with the Amorites, the Pûnites, and the Judæans of Sheshanq's inscription (and, indeed, with several other types), will show the high value of this method of reproducing relief sculpture for study.

I must now pass on to notice examples identified by local, and not ethnic, names in North Syria and downwards through Palestine, and many of these are of high interest. The result of a long study of the geographical names I have given in the *Proceedings and Transactions of the Society of Biblical Archæology*. I will now take these names in approximate local order, beginning with the Euphrates.




A. Iannua. This fortress, which I have

already mentioned, was one of three great strongholds of the Upper Rutenu taken by Thothmes III, and it here appears as defended by the Aramæan Khal-people against Seti I. It is a fortified place with trees, and the inhabitants wear long robes with capes, such as were worn by Semitic people as far south as Ascalon. I think it may be the place now called Einya, south of ed-Deir on the west bank of Euphrates, and not remote I think, from another of the triad, Anaukas, which I take to be Annukas, north of Kirkesion, mentioned by Procopius as an ancient fortress reconstructed by Justinian. In photos. 78-81 B, we have heads of these people well worthy of study.

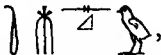
B. Next we have inhabitants of  (Brugsch,

"Geog.," ii, 75), taken by Râmeses II. I think it may be a Luz in North Syria, perhaps Qalb Lûzeh, near Edlip. (Photos. 18-20).





c. , also taken by Râmeses II, occurs in the


North Syrian List of Thothmes III, and must, I think, be Kefr Aya, an ancient place south of Homs (photos. 22-23). The heads are very good bearded Aramæans of the Khal-people, I think, like the men of Luza.


D. , Demesqu, Damascus. In Assyrian Di-


masqa. The same name without the suffix seems to remain in Dimes, west of Damascus, on the route over the Antilebanon. Here we have a man of Damascus of a date much nearer to Joseph than to Moses (photo. 117). Like No. 120 he has a pointed beard, and bears much resemblance to the men of Pûn.

E. , Merom (photos. 121-3). Excellent examples of the handsome full-bearded Syrians in long robes and capes, doubtless from Merom, west of Huleh-water.

F. , Dapur, *i.e.*, the fortress of Tabor, of the Amorites, defended by pigtailed Hittites against Râmeses II. The name is recalled by the present Debûrieh, very near Mount Tabor. Photo. 753 shows us the high towers manned by Hittites. Some are falling from the battlements. One has a strange aspect, for his two side-tails fall from his head like horns. A man on the wall holds out pleadingly a sort of stand, like those used for offerings in Egypt, from which points arise which seem to me to be flames of incense burnt as a sign of submission, for they exactly resemble the small flames from Egyptian censers. The same thing is seen elsewhere, as at Asqalon in photo. 748. They are burning incense to the divine Pharaoh just as lapsed Christians were made to do to the genius of Cæsar. In photo. 124 we have an Amorite of Dapur with a very good face.

G. In , (photo. 135), Qamna. I think we have the present Tell Keimûn near the Kishon River in the plain of Esdraëlon (Great Map, sheet viii, "Mem.," ii, 48, 69. "Special Papers," 223).

H. , Atha . . . , perhaps Tell Thôrah, east of Tell Keimûn (photos. 136-8). The head 138 looks as if wearing a crested casque.

I. , Gaba . . . , perhaps Jebâta, Gabatha of Jerome (Sheet v, Mi) north-east of Tell Thôrah.


There are some other names of this interesting series of 18 forts taken by Râmeses II, and represented at the Ramesseum. (Brugsch, "Geog.," ii, 71, &c.), which may perhaps be made out by further study. It appears by the inscription that the heads marked *Karpu* . . . (132-4) belong to Beth-anath, probably the


sanctuary in Galilee, west of Kadesh Naphtali now identified with Aintha.

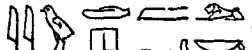
J.  , Asqalna, Asqalon. In photos.

30-1 we have women of Ascalon with long tresses, and in 32-3 warriors of the same celebrated city besieged by Râmeses II, and in photo. 748 the citadel with the same figures and others imploring mercy. This is the most southward of the places with which we have to deal in this era of Râmeses II.

And now we pass over some seven centuries of history and come to the celebrated record of the conquests of Sheshanq, the victor of Rehoboam, in Palestine, from which Mr. Petrie has selected four typical heads of Jews of this period of the XXII<sup>nd</sup> dynasty of Egypt.

a. (No. 28 in Shishak's list)  , Adir.

I think this is the present et Tireh (Sheet xvii, Ls, "Mem.," iii, 128), photo. 39. It stands next in the list after  which Prof. Maspero identifies with Makkedah, and next before the celebrated name—

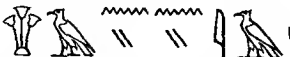
b.  , which reads letter for letter in Hebrew **יְהוּד המלך**, that is, Yûd of the King.

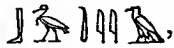
This Yûd has been taken by Capt. Conder and Prof. Maspero for **יהודה**, Yehûd of the tribe of Dan (Jos. xix, 45), now el Yehûdieh (Sheet xiii, Jq), eight miles east of Joppa. The LXX version gives *Ioudê*, the Vulgate Jud.

Dr. Max Müller, of Nürnberg, has lately (August, 1887), strongly objected to the opinion that the name Judah is contained in it at all, and Mr. le Page Renouf pronounces that the objection (of the omission of the first *h* in Yehudah) "is absolutely fatal."


If this be so, then we cannot have Yehûd in our name. On my putting the question, however, to Dr. Neubauer he replies: "I believe that there can be no objection to **יהודה** for **יהודה** at any period; it is merely dialectical like **יוסף** = **יהוסף**, **יואש** = **יהואש**, &c. In the Talmud **יהודה** occurs often."

In the Assyrian inscriptions the name of Judah is written Yaudâ without any *h*.

c.  , Haninia. Compare the ter-

mination (= **יה**) with  , No. 97 in the Palestine List of Thothmes III.

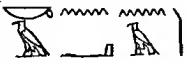
This Haninia seems to be Beit Hanina near Gibeon (Sheet xvii, Mt), three and a half miles north-west of Jerusalem. It is 93 in Shishak's List (photo. 36). Capt. Conder identifies the place with the ענניה of Nehemiah xi, 32.

d. . No. 83 of Brugsch, 81 of Maspero in Shishak's List. I think this name remains in 'Ain Jannâta and Wady Jannâta (Sheet xiv, Kr) 6½ miles north of Beit Ur et Tahta. But possibly it may be Gath in its original form גת (photo. 37).

Here, then, we have four Jews born in the palmy age of Judæa, and two or three of them from near Jerusalem.

I am inclined to think that these faces were studied from life, although all would combine very well into an excellent "composite." There are minor differences in the faces evident to an accustomed eye. Besides, one has a necklace, and another has no fillet round his head. They are distinguished from other Semitic types, as those of the Shasu or the Rutenu, by more delicate and refined features.

If we turn to the Assyrian representations of ascertained Hebrews, the faces are of special interest. The oldest is on the black obelisk of Shalmaneser III in the British Museum, where we see Jehu and his princes. Compare these men of Israel with the nobles of Lakish, making submission to Sennakherib, and the difference is manifest. Jehu's men have strong aquiline features, and that peculiar shrug or quirk of the nostril, which gives a shrewd and sinister look to many a Jew of London streets. In drawing one of these familiar faces from the monument, I was ready to believe that it belonged to a lineal ancestor of London "*clo'-men*." The bag falling down the stooping back deepened this impression. But the southern Jews of Lakish are men of more refined features and expression, and more like our Jews of Shishak's sculptures. I must not linger over these portraits of princes, who may have been among the evil counsellors of Rehoboam.

The last place represented in our collection of heads is the important fortress of , which has been very well identified by Capt. Conder, R.E., with Khûrbet Kan'an, six miles south from Hebron, covering the access from the south by that very ancient road from Egypt across the desert, discovered by the lamented Rev. F. W. Holland, starting out due east from Ismailieh. This high-built stronghold was besieged by Seti I, and was defended by people called Shasu of Kanana, who, in the sculpture from which this head was taken, wear a kind of body-armour, and carry spears and a formidable

battle-axe. They wear pointed beards. These would be the כנענים, Kanaanites, so familiar to us in the Bible.

Lastly, I have to take some account of certain examples of the inhabitants of Egypt itself.

The Egyptians of the Old Kingdom are represented to us in the most surprising statuary yet brought to light. This has been elucidated with great skill and learning in the works of Emile Soldi, Perrot and Chipiez, and others.

We have a few special examples of the primitive long-headed Egyptians in Mr. Petrie's photographs Nos. 263-8, and we have quite different types in Nos. 673 (Setau and his wife), and 244-5, and 775.

The higher Egyptians of the great XIIth dynasty have to my eyes a cast of their own; a well-rounded countenance of intelligent and very urbane expression, beaming with that look of happy and genial good will which is so charming in the statuary.

In strongest contrast to this type we have a few examples, all of them sculptured in the round, of the so-called Hyksôs or Shepherd Kings.

Mr. Petrie has provided photographs, full-faced and in exact profile, of those most impressive sphinxes of Sâh, and of the Hyksôs King from the Faiûm, and also the front faces of the fish offerers of Sâh. To these must be added for study the remarkable head from the Ludovisi Collection at Rome, figured and described by Lenormant. ("Frammento di Statua, &c. *Bullettino della Commissione Arch. Comunale di Roma*," 1877), and the fine head, probably of Apepi, lately found by M. Naville, at Bubastis. Moreover, with these examples before our eyes, I cannot help thinking that the interesting statuette of green basalt in the Museum of the Louvre is after all, as Deveria thought, a memorial of a Hyksôs Pharaoh, although I know that Prof. Maspero is of quite a different opinion. The same stern character and bony build of face seems to me to mark this small sculpture.

I have written on this subject elsewhere at some length, but am now glad to quote the high authority of Prof. Flower, from the record of a short discussion on Mr. R. Stuart Poole's paper before cited. The words refer to the sphinx of Sâh, which, says Prof. Flower, "has certain Mongolian characters, especially in the breadth and prominence of the cheek-bones, so much so as to suggest that the invasion and occupation of Egypt by the so-called Shepherds was one of the numerous instances in which some of the nomadic Tartar hordes of Central and Northern Asia have poured forth from their native lands and overrun and occupied for a longer or shorter period the countries lying to

the west and south of them. If this view can be maintained, the Hyksos invasion would have been only one of the series of which the conquests of Attila, Tchingis Khan, and Timur, and the more permanent settlement of the Finns, the Magyars, and the Turks in Europe, are well-known examples." ("Journ. Anthropol. Inst.," vol. xvi, 377.)

These crude commentaries of mine on the races of the Egyptian monuments have led us through a grand tour, starting westwards from the Delta, and returning thither from the east. I have endeavoured approximately to fix the geographical position as well as the ethnological identity of the various examples before us. Those who are most accustomed to such inquiries will be most indulgent in their criticism.

As a last word, I would heartily echo the wise recommendation of Prof. Sayce at Manchester last year, to the effect that specialists, while properly keeping within their own bounds, should earnestly cultivate a spirit of mutual assistance in those vast fields of study, which require the best joint endeavours of all.

## APPENDIX.

### *Notes on Pûn and its Productions.*

It seems best to cast as an appendix some remarks on the highly interesting land of Pûn, which do not come precisely within the limits of my original task of explaining Mr. Flinders Petrie's collection of ethnic types.

At the Manchester Exhibition in the autumn of 1887 the place of honour was given to the royal chair of Queen Hatasu (Hashepsu), the renowned Lady Pharaoh, who, like our Elizabeth, deserves the title of "high and mighty prince." The beautiful and animated head at Bûlaq (No. 617) which was assigned to Taia, Queen of Amenhotep III, has for years past appeared to me to be that of Hatasu. I was convinced of this by comparing a photograph of it with the profile of Hatasu given by Rosellini. At last in Meyer's "History" (p. 233), I find the head engraved as hers.


This enterprising Queen sent an expedition of five ships down the Red Sea to the coast of Pûn with memorable success, and had the various incidents "lively set forth" in beautiful relief-sculpture on the walls of a magnificent structure in Western Thebes. The whole has been elucidated by Mariette, Dumichen, Maspero, and Lieblein, in the publications to which I have given references in my list of authorities. The *tableaux* are masterpieces of artistic spirit and accuracy, enabling men of

science to identify the animals and plants represented with the various species still existing.

Dr. Dümichen has in his recent "History" given reasons for the assured opinion that the land of Pûn lay on both sides of the Red Sea in its southern part, and further also in Somâli-land; and he also concludes, from the hieroglyphic inscriptions at Deir-el-Bahri, that the landing-place lay on the Arabian coast. ("Gesch.," 102, 119-122).

Prof. Lieblein has shown that at the same time another expedition, to inner Africa, brought tribute or gifts to the great Queen. It does not follow (as Mariette had argued) that Pûn must be in Africa, because of the presentation of giraffes, for these are not represented among the products of Pûn, but among those of Cush, in another line of procession. ("Zeitschr. für Aeg. Spr.," 1885, 150.)

If Dr. Dümichen is right in his inference from the captain's word of command "eastward!" inscribed above the vessel, and the landing took place on the Arabian coast, I think the port may well have been Mûza on the land-locked side of the straits, now left inland on the way from Mokha over the mountains, but formerly a principal port, when the sea covered the present plain; for Mokha, the present port, is only of six centuries standing (Drummond, "Origines," iii, 260), but even in the second century of our era Mûza was still a great seaport of commerce at the foot of the mountain range of Yemen (Arrian), and it was only at Mûza (says Lenormant, "Hist.," Eng. ed., ii, 302), that ancient writers mention large ships capable of making the voyage to India.

Now I think Mûza must be the  of the "Karnak South List" (No. 78).

The architecture of the Sabæans "must have been originally copied from the Babylonians," says Lenormant ("Hist.," Eng. ed., ii, 321), and their palaces rose in stages. Now Queen Hatasu's unique structure dedicated to Hat-hor the Lady [goddess] of Pûn is (unlike genuine Egyptian buildings), terraced into the mountain side in this very manner. Was it not fashioned on the Pûnite motive out of admiration of the glories of that venerated region? (For plans and perspectives see Perrot et Chipiez, "Hist. de l'Art." i, 425, 429; Lenormant, "Hist. Anc.," 9<sup>me</sup> ed., ii, 187).

The grand marvel that astonished Queen Hatasu's officers was the sight of the terraces of incense.

If the mountain sides of Pûn in those old days were such as those which General Haig has described, it is not surprising that such wonder was aroused. That distinguished engineer officer left Hodeida for Sanâa, the ancient capital of Yemen, and

ascended the mountains 8,000 feet high. "The whole western face of the mountain," he writes, "was terraced from top to bottom, quite 6,000 feet. It was the most astonishing monument of human pains and labour that I ever witnessed. The terraces extended for miles on each side of the path, winding in and out of the ravines and spurs of the mountains. I estimated that on an average for the greatest part of the height each terrace was only double [in width] the height of the wall that retained it, *i.e.*, the aggregate height of the terrace walls in this one mountain is 3,000 feet. One can hardly conceive the amount of toil and expense involved in their original construction. And what was equally surprising to me was the capital preservation in which for the most part they are kept. . . . The whole of the crops, dhurra (or millet), wheat, barley, vetches, coffee, are grown on the terraces thus formed. It was a most impressive sight, and gave a wonderful impression of the capabilities of the race that constituted and maintains them." This system of terracing is common to all Yemen, General Haig tells us, and carried out everywhere, even where the slopes do not require it unless to retain the rainfall and save the soil.

The most coveted product of the land of Pûn was the incense. But we will first say a word about the gold. The gold brought from Pûn is described as "fresh gold of the land of the Amu." There was of course much gold derived from Nubia, but this gold of the Amu would seem to be Asiatic and not African, and this looks as if it was brought to Egypt from an Arabian port. Last year (1887) Sir Richard Burton wrote in the "*Academy*" of August 20 that he had received reliable news of great quantities of good gold quartz on the western side of Arabia, of "auriferous discoveries extending from between the mountains of Northern Midian along the line of the Western Arabian Ghâts, until they meet the volcanic region about Aden. They have been reported to me," he says, "from behind Yambu and Meccah, Mocha and Hodaydah; and I have a thorough conviction that some day they will be found exceedingly valuable." Thus then the gold of Arabia may be again forthcoming from "the land of the Amu."

With regard to the incense trees very interesting information has been given of late years by Sir George Birdwood ("*Trans. Linnæan Soc.*," vol. xxvii (1871), p. 111 *et seq.*; "*Bible Educator*," vol. i, pp. 328 *et seq.*, 374 *et seq.*). He quotes the classic authorities. Theophrastus (B.C. 394-287) says that in Arabia "the trees of frankincense and myrrh grow some of them on the mountain and others in private plantations at the foot of the mountain, on which account some of them are cultivated and

others are not." Now this agrees with the mention of the terraces of incense in the Egyptian inscriptions, and the incense trees being also shown as growing on the low grounds by the dwellings built on piles and among the palm trees. Doubtless the thirty-one young incense trees removed in crates, with their roots as they grew, on board the Egyptian ships, were cultivated in the royal gardens. Sir G. Birdwood gives a scientific account of three species of *Boswellia* which he cultivated in India, with good success, from cuttings received from Colonel Playfair at Aden. These are all figured, and in the Natural History Museum at South Kensington are preserved the dried specimens. The exquisite relief-sculptures in alabaster at Deir-el-Bahri are so carefully executed that it is easy to see the fidelity with which they delineate the various plants, and on studying the photographs of these and the illustrations of Sir G. Birdwood, and also the original dried specimens, it seems to me most likely that the artist had before him the kind called by the Arabs Yegaar, and named *Boswellia Frereana*. This, unlike the rest, has not serrated leaves, and the Egyptian artist has so represented his incense trees. Some of the dried leaves are more than two inches in length.

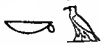
"The frankincense trees," writes Sir G. Birdwood, "have a general resemblance to the mountain-ash when putting forth its spring leaves. As I first saw this plant in Playfair's garden at Aden in September, 1868, I was much struck by its elegant singularity. The long racemes of green star-like flowers, tipped with the red anthers of the stamens, droop gracefully over the clusters of glossy glaucous leaves, and every part of the plant gives out the most refreshing, lemon-like fragrance."


This is the delicious scent spoken of in the Egyptian Queen's inscriptions: "A splendid gift of fresh incense to Amen-Râ, the Lord of the thrones of the world, Lord of heaven . . . Her Majesty brings in her hands the incense-spices: all her limbs are scented with the divine fluid."

Sir G. Birdwood has reproduced the valuable old engraving of Thevet, a French writer, whose work was published in 1575, representing the incense tree in Arabia, from which men are gathering the resin exuding from incisions in the stem. Others are cutting the bark, and one man is carrying away on his back some plants in a basket resembling in form those in which the young trees were brought to Thebes, some three thousand years before.

In concluding this notice of some chief products of the land of Pûn it is right to add that the great Arabian region of incense trees appears to have always have been found on the south coast in Hadramaut (Hazar-maveth of the Bible), and the

principal emporium was Kaneh, in the bay of Makulla. The great African region of incense is on the opposite coast of Somâli-land, its chief point being (as Prof. Maspero has pointed out), the Elephant River between Râs-el-Fil, and Cape Guardafui.

I do not wish to insist on Mûza as the port of embarkation of the treasures brought to Queen Hatasu. If the five ships came to land in Hadramaut, at Kaneh perhaps, they may have moored on the eastward side of a harbour or bay. The *Kávnē éμπόριον* of Ptolemy (vi, 7, 10), may be the  of the "Karnak South List" (No. 154), as it has been taken for the כנה of Ezek. xxvii, 23, עֵדֶן in that case being Aden (Lenormant, "Hist.," Eng. ed., ii, 201).

As regards the Somâli coast, the "Karnak List" gives us  (No. 77), which Mariette takes as the modern Habo, an anchorage west of Guardafui, and near the position indicated by Maspero. It may, I think, be an Arabian place, but the whole subject will repay very careful study. Much difficulty arises, in fact, from the very natural reduplication of old Sabæan names on the African side of the Red Sea; and I must not be tempted into such questions.

It is my hope to publish soon some contributions towards the study of the great "Karnak List of the South," which has been so carefully examined and recorded by Prof. Maspero by way of correction of former transcriptions.

### *Description of Plates X and XI.*

#### *Plate X.*

- Fig. 1. Profile of Tahennu ; from near the Syrtes (83).
- Fig. 2. Profile of Hânebu, a Greek of Europe or Asia (1).
- Fig. 3. Profile of Lebu, probably Libyan ; XX dynasty (162).
- Fig. 4. Profile of Mashuash ; XX dynasty (164).
- Fig. 5. Profile of Tsakuri ; Teukrian ; XX dynasty (158).
- Fig. 6. Profile of Shairdina ; probably Sardinian ; XX dynasty (200).
- Fig. 7. Profile of Sharkalsha ; probably Sicilian ; XX dynasty (160).
- Fig. 8. Profile of Dardani ; Dardanian (12).
- Fig. 9. Profile of Pulista ; Philistine ; XX dynasty (182).
- Fig. 10. Profile of Pûn ; south end of Red Sea (5).
- Fig. 11. Profile of Pûn ; Memthu ; Metta (105).
- Fig. 12. Profile of Menti of Sati ; Sinaitic Bedawi (95).

## Plate XI.

- Fig. 1. Profile of Shasu ; Arab (42).  
 Fig. 2. Profile of Rutenu ; North Syria (69).  
 Fig. 3. Profile of Syrian (238).  
 Fig. 4. Profile of North Syrian (*cf.* Dr. Gwyther's relief from Merash) (222).  
 Fig. 5. Profile of Syrian with horned casque (228).  
 Fig. 6. Profile of Amorite (147).  
 Fig. 7. Profile of Kheta (143).  
 Fig. 8. Profile of Kheta (262) (*cf.* "Lares and Penates," wood cut, p. 55).  
 Fig. 9. Profile of man of Ianua (81A).  
 Fig. 10. Profile of man of Aia (23).  
 Fig. 11. Profile of Chief of Iaûd ha-Melek ; Royal town in Judea ; XXII dynasty (38).  
 Fig. 12. Profile of Chief of Ganata ; XXII dynasty (37).

The profiles in these plates are copied from Mr. Flinders Petrie's collection of racial photographs from the Egyptian monuments, and the figures placed in parenthesis after the names refer to the numbers on the original photographs in this collection.

## DISCUSSION.

MR. F. L. GRIFFITH, although unprepared to add anything to the able and exhaustive discussion by the reader of the paper, desired to call attention to a recent paper by Mr. Le Page Renouf in the "Proceedings of the Society of Biblical Archæology" (March, 1888). Mr. Renouf there appeared successfully to show that the chief link that was supposed to bind together the languages of the Asiatic Semites and the North African so-called sub-Semites was a faulty one. The remarkable similarity of many pronouns in Egyptian and Semitic tongues had first struck Gesenius. But the pronouns in many parts of the world are made up of demonstrative almost interjectional roots combined together. The primitive demonstratives were much limited to certain sounds in all these languages ; and coincidences in the pronouns might therefore, be expected, and were not uncommon. Mr. Renouf broke up the Egyptian and Semitic forms into their constituent parts, and showed that the resemblance in the composite forms was only accidental. The fact of a different origin for the two groups of languages would have an important bearing on ethnology.

MR. G. BERTIN said that his limited knowledge of Egyptian did not allow him to carry on independent researches on the hieroglyphic documents, but he had listened with great interest to the paper. He was specially struck by the fact that a low type found in Egypt was also noticed in Elam, and also by the curious



1



2



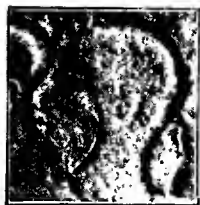
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11



12

PROFILES FROM THE EGYPTIAN MONUMENTS.



locks of hair of the Kheta which reminded him of the hair dress given to the Babylonian hero, Gisdubar. As to the objections made by certain Egyptologists to the connection of the Egyptian and the Semitic tongues, they are, as Prof. Sayce says, antiquated, and only show the ignorance of these Egyptologists with regard to the Semitic tongues. Besides the numerals and the pronouns, the nominal, temporal, and verbal formations are the same in the two groups of languages, and Mr. Bertin had lately shown that there exists also a Grimm's law. The Semites came from Africa, as also the Egyptians, who dwelt primitively to the south of the equator; Mr. Bertin had gathered many proofs of this fact, but would mention only the tradition related by the Egyptian priests to Herodotus that formerly the sun rose to the right and set to the left; if the Egyptian had inhabited the austral hemisphere and migrated to the north, the supposed change of course of the sun would be explained.

Mr. FLINDERS PETRIE, Prof. FLOWER, and the PRESIDENT also joined in the discussion.

Mr. TOMKINS in reply acknowledged gratefully the kind reception given to his paper, which was intended as a rough sketch of information preliminary to the more proper work of the anthropologist. He then spoke with high appreciation of the valuable results of "composition" of photographs, as practised by the President, by which all that is common is accentuated, and all that is differential eliminated, and cited as an excellent instance the plates which illustrate Dr. Neubauer's paper on "Race-types of the Jews," and Mr. Joseph Jacobs's paper which follows it in the Journal of the Institute for August, 1885. It is agreed that these photogravures are singularly successful in defining a race-type; and in comparing the profiles with the four examples taken by Mr. Petrie from Shishak's reliefs at Karnak (Nos. 36-39), Mr. Tomkins held that there is a clear similarity of facial contour (allowing for the comparison of boys with bearded men), which will not hold good between these boys and Amorites, or Shasu, or other groups in Mr. Petrie's gallery. The nobles of the southern kingdom (Judah) in Shishak's List, like those of Lakish in Sennakherib's relief-sculpture, are very distinct from the northern Israelites of Jehu's court on the black obelisk of Shalmaneser, who show the strong aquiline features and peculiar shrug of the nostril so familiar in many Jews of London streets, and not to be identified with the Assyrian profile.

The four examples of Rehoboam's princes exhibit a more delicate and refined profile than any other type before us, and one has even a nose slightly *retroussé*, like one of our boys in the frontispiece-plate of the Journal.

This examination might well be pursued further, and illustrates the great importance of collating groups of "modern instances" with "the antique."

JUNE 26th, 1888.

FRANCIS GALTON, ESQ., M.A., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The election of the following members was announced :—W. VAUGHAN MURRAY, Esq., F.G.S., of 4, Westbourne Crescent, W.; and WALTER W. LAW, Esq., of Yonkers, New York, U.S.A.

The following presents were announced, and thanks voted to the respective donors :—

FOR THE LIBRARY.

From the AUTHOR.—Notes on some recent Neolithic and Palæolithic Finds in South India. By R. Bruce Foote, F.G.S.

— Compilation of Notes and Memoranda bearing upon the use of Human Ordure and Human Urine in Rites of a Religious or Semi-Religious Character among various Nations. By John G. Bourke, Captain, Third Cavalry, U.S. Army.

— Les dernières Étapes de la Généalogie de l'Homme. Par M. P. Topinard.

From the SOCIETY OF ANTIQUARIES.—Archæologia, Vol. li.

From the ANTHROPOLOGICAL SOCIETY OF WASHINGTON.—The American Anthropologist, Vol. i, No. 2.

From the ASSOCIATION.—Proceedings of the American Association for the Advancement of Science, Thirty-sixth Meeting, held at New York, August, 1887.

From the UNIVERSITY.—The Journal of the College of Science, Imperial University, Japan. Vol. ii, Part 1.

From the SOCIETY.—Proceedings of the Royal Society. No. 267.

— Proceedings of the Royal Society of Edinburgh. Nos. 115–124. Transactions. Vol. xxx, Part 4; Vol. xxxi; Vol. xxxii, Parts 2, 3, 4; Vol. xxxiii, Parts 1, 2.

— Journal and Proceedings of the Royal Society of New South Wales for 1887. Vol. xxi.

— Proceedings of the Society of Antiquaries of London. Vol. xii. No. 1.

— Journal of the Society of Arts. Nos. 1856, 1857.

— Bulletin de la Société de Borda, Dax. 1888. Part 2.

From the EDITOR.—Nature. Nos. 972, 973.

— Science. Nos. 278–280.

— Photographic Times. Nos. 351, 352.

— American Journal of Psychology. Vol. i. No. 3.

— Revue Scientifique. Tome xli. Nos. 24, 25.

Mr. ARTHUR S. BURR exhibited a collection of pottery, &c., from recent excavations in New Mexico, upon which Mr. LEWIS and Prof. FLOWER made some remarks.

Mr. H. O. FORBES exhibited a series of photographs of New Guinea types.

A paper by Mr. E. H. MAN, on the "Nicobar Islanders" was read by the Secretary. This paper forms Part I of a series of communications on this subject. Its publication is temporarily deferred in consequence of the proof having been sent to India for revision by the author.

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NOVEMBER 13TH, 1888.

FRANCIS GALTON, Esq., F.R.S., *President, in the Chair.*

The minutes of the last meeting were read and signed.

The election of RICHARD BANGAY, Esq., M.D., of Belmont, Lyme Regis, was announced.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

- From the AUTHOR.—Excavations in Cranborne Chase, near Rushmore, on the borders of Dorset and Wilts, 1880–1888. By Lieut.-General Pitt Rivers, D.C.L., F.R.S. Vol. ii.
- A Practicable Decimal System for Great Britain and her Colonies. By R. T. Rohde.
- On the Original Inhabitants of Bharatavarsa or India. By Gustav Oppert, Ph.D.
- The Development of Language. By Horatio Hale.
- Comparison of the Convolutions of the Seals and Walrus with those of the Carnivora, and of Apes and Man. By Sir W. Turner, Knt., M.B., LL.D., F.R.S.
- The Nephrite Question. By Dr. A. B. Meyer.
- On the Siberian Origin of some Customs of the Western Eskimos. By John Murdoch.
- On some African Entanglements. By Horace Waller.
- Notes and Observations on the Kwakiool People of Vancouver Island. By George M. Dawson, D.S., F.G.S.
- Features of Society in Old and New England. By Henry Mann.

From the AUTHOR.—*Les Sépultures de Solutré*. Nos. 2, 3. Par G. de Mortillet.

— *Mémoire sur la platycnémie chez l'homme et chez les anthropoïdes*. Par le Docteur L. Manouvrier.

— *Il Corridore Martinelli*. Osservazioni Antropologiche del Dott. Jacopo Danielli.

— *La Grotta Nicolucci presso Sorrento*. R. Lorenzoni.

— *Museo la Plata: Sus Progresos durante el primer semestre del año 1888*. Francisco P. Moreno.

— *La Letteratura degl'indigeni Americani*. Prof. Ferdinando Borsari.

— *La Statica Grafica: lezioni dell'ingegnere*. Carlo Saviotti.

From E. G. RAVENSTEIN, Esq., F.R.G.S.—*The Arabs in Central Africa and at Lake Nyassa*. By James Stevenson, F.R.S.E.

— *A map of the country between Lakes Nyassa and Tanganyika*. Compiled by E. G. Ravenstein, F.R.G.S.

From D. MACRITCHIE, Esq.—*Journal of the Gypsy Lore Society*. Vol. i. No. 2.

From the AUTHOR (through Prof. T. Rupert Jones, F.R.S.).—*Hällristningar från Bohuslän (Sverige)*. Tecknade och utgifna af L. Baltzer. Med förord af Viktor Rydberg. Haftena i-x.

From the SECRETARY OF STATE IN COUNCIL OF INDIA.—*India Office Library Catalogue*. Vol. i.

From Dr. GUGLIELMO KITCHAMAN.—*L'Ateneo*, 1888. Fas. 6, 7, e 8.

From Dr. OTTO FINSCH.—*Ethnologische Erfahrungen und Belegstücke aus der Südsee: Beschreibender Katalog einer Sammlung im k.k. naturhistorischen Hofmuseum in Wien*. Von Dr. O. Finsch in Bremen. Erste Abtheilung: Bismarck-Archipel.

From the KAIS. AKADEMIE DER WISSENSCHAFTEN, WIEN.—*Mittheilungen der Prähistorischen Commission*. Nr. 1. 1887.

From the DEUTSCHE GESELLSCHAFT FÜR ANTHROPOLOGIE, ETHNOLOGIE, UND URGESCHICHTE.—*Archiv für Anthropologie*. Band xviii. 1, 2.

— *Correspondenz-Blatt*. 1888. Nr. 6-9.

From the BERLINER GESELLSCHAFT FÜR ANTHROPOLOGIE, ETHNOLOGIE, UND URGESCHICHTE.—*Zeitschrift für Ethnologie*. 1888. Heft 2, 3.

From the SOCIETÀ ITALIANA DI ANTROPOLOGIA, ETNOLOGIA, E PSICOLOGIA COMPARATA.—*Archivio per l'Antropologia*. Vol. xviii. Fas. 1.

From the GEOLOGICAL SURVEY OF CANADA.—*Annual Report*. 1886.

From the SMITHSONIAN INSTITUTION.—*Annual Report*. 1885. Part ii.

— *Smithsonian Miscellaneous Collections*. Vols. xxxii, xxxiii.

From the PEABODY MUSEUM.—*Palæolithic Man in Eastern and Central North America*.

From the ROYAL ARCHEOLOGICAL INSTITUTE.—*The Archæological Journal*. Nos. 178, 179.

From the ROYAL SCOTTISH GEOGRAPHICAL SOCIETY.—*The Scottish Geographical Magazine*. Vol. iv. Nos. 7-11.

- From the ESSEX FIELD CLUB.—The Essex Naturalist. Vol. ii. Nos. 5-10.
- From the ANTHROPOLOGICAL SOCIETY OF WASHINGTON.—The American Anthropologist. Vol. i. No. 3.
- From the SOCIÉTÉ ARCHÉOLOGIQUE, AGRAM.—Viestnik hrvatskoga Arkeologičkoga Društva. Godina x. Br. 3, 4.
- From the ACADÉMIE ROYALE DES SCIENCES, AMSTERDAM.—Verslagen en Mededeelingen, Afd. Natuurk. 3<sup>e</sup> Reeks Deel iii, iv. Jaarboek, 1886, 1887.
- From the MAGYAR TUDOMÁNYOS AKADÉMIA.—Almanach 1888; Nyelvtudományi Értekezések, xiv, 1-7; Nyelvtudományi közlemények, xx, 3; Nyelvemléktár, ix, x; Kúnos Ignác. Oszmántörök népköltési gyűjtemény, i; Történet-tudományi Értekezések, xiii, 6, 7, 8; Társadalmi Értekezések, ix, 2-7; Ballagi Aladár. *Colbert*; Szádeczky Lajos. Izabella és János Zsigmond Lengyelországban; Ungarische Revue, 1887, 8-10; 1888, 1-6; Naturwissenschaftliche Berichte, v Bd.
- From the BATAVIAASCH GENOOTSCHAP VAN KUNSTEN EN WETENSCHAPPEN.—Verhandelingen. Deel xlv, Afl. 2; Tijdschrift voor Indische Taal-, Land- en Volkenkunde. Deel xxxii, Afl. 4; Notulen van de Algemeene en Bestuurs-Vergaderingen. Deel xxvi, Afl. 1, 2.
- From the ACADEMY.—Bulletin de l'Académie Impériale des Sciences de St. Pétersbourg. Tom xxxii. No. 2, 4.
- Boletín de la Academia Nacional de Ciencias in Córdoba. Tomo x, Ent. 2.
- Katalog der Bibliothek der Kaiserlichen Leopoldinisch-Carolinischen Deutschen Akademie der Naturforscher. Lief. 1.
- Nova Acta Academiæ Cæsareæ Leopoldino-Carolinæ Germanicæ Naturæ Curiosorum. Band xlix, 1, li.
- From the ASSOCIATION.—Journal of the East India Association. Vol. xx. Nos. 3-5.
- Proceedings of the Geologists' Association. Vol. x. No. 7.
- Journal of the Royal Historical and Archæological Association of Ireland. Nos. 75, 76.
- Report and Transactions of the Devonshire Association for the Advancement of Science, Literature, and Art. Vol. xx; Extra volume. The Devonshire Domesday. Part v.
- Publications of the American Statistical Association. New Series. No. 1.
- Cincinnati Museum Association. Seventh Annual Report, 1887.
- From the INSTITUTE.—Proceedings of the Royal Colonial Institute. Vol. xix. 1887-8.
- Transactions and Proceedings of the New Zealand Institute, 1887. Vol. xx.
- From the INSTITUTION.—Journal of the Royal United Service Institution. No. 144.
- Journal of the Royal Institution of Cornwall. Vol. ix. Part 3. October, 1888.

- From the SOCIETY.—Proceedings of the Society of Antiquaries of London. Vol. xii. No. 2.
- Proceedings of the Royal Society. Nos. 268–271.
- The Scientific Transactions of the Royal Dublin Society. Vol. iii, No. 14; Vol. iv. No. 1.
- The Scientific Proceedings of the Royal Dublin Society. Vol. v, Parts 7, 8; Vol. vi, Parts 1, 2.
- Proceedings and Transactions of the Royal Society of Canada for the year 1887. Vol. v.
- Papers and Proceedings of the Royal Society of Tasmania for 1887.
- Proceedings of the Royal Geographical Society. Vol. x. Nos. 7–11.
- Transactions and Proceedings of the Royal Geographical Society of Australasia (Victorian Branch). Vol. v. Part 1.
- Journal of the Society of Arts. Nos. 1858–1877.
- Proceedings of the Society of Biblical Archæology. Vol. x. Part 8.
- Journal of the Royal Geological Society of Ireland. Vol. vii. Part 2.
- Proceedings of the Asiatic Society of Bengal, 1888. Nos. 2, 3.
- Journal of the Asiatic Society of Bengal. Nos. cclxxxii, cclxxxiii.
- Transactions of the Asiatic Society of Japan. Vol. xvi. Part 2.
- Journal of the China Branch of the Royal Asiatic Society. Vol. xxii. No. 5.
- Leeds Philosophical and Literary Society. The Annual Report for 1887–8.
- Bulletins de la Société d'Anthropologie de Paris. Tome xi. Fas. 1, 2.
- Bulletin de la Société d'Anthropologie de Lyon. Tome, vi, 1887; Tome. vii, Nos. 1, 2.
- Bulletin de la Société Impériale des Naturalistes de Moscou, 1888. No. 2.
- Bulletin de la Société de Borda, Dax. 1888. 3.
- Boletim da Sociedade de Geographia de Lisboa. 1887. No. 7, 8.
- Verhandlungen des deutschen wissenschaftlichen Vereins zu Santiago. 1887. 5 Heft.
- X Jahresbericht des Vereins für Erdkunde zu Metz für 1887–88.
- Mittheilungen des Vereins für Erdkunde zu Leipzig. 1887.
- V–VI Jahresbericht (1886–88) des Württembergischen Vereins für Handels-geographie und Förderung deutscher Interessen im Auslande.
- Mittheilungen der Anthropologischen Gesellschaft in Wein. xviii Band. II und III Heft.
- Schriften der Physikalisch-ökonomischen Gesellschaft zu Königsberg i. Pr., Jahrg. xxviii. 1887.

- From the UNIVERSITY.—Journal of the College of Science, Imperial University, Japan. Vol. ii, Parts 2, 3.  
 — Mittheilungen aus der Medicinischen Facultät der Kaiserlich-Japanischen Universität. Band i, No. 2.  
 From the EDITOR.—American Antiquarian. Vol. x. Nos. 4, 5. July, September, 1888.  
 — Journal of Mental Science. Nos. 110, 111.  
 — Nature. Nos. 974–993.  
 — Photographic Times. Nos. 353–372.  
 — American Journal of Psychology. Vol. i. No. 1.  
 — Science. Nos. 281–299.  
 — Timehri. No. xiii.  
 — Revue d'Anthropologie. Tom. iii, 1888. No. 4.  
 — Revue d'Ethnographie. Tom. vi, 1888. Nos. 1–3.  
 — Revue Scientifique. Tom. xli; No. 26; Tom. xlii, Nos. 1–19.  
 — Bullettino di Paletnologia Italiana. T. iv. N. 5–8.  
 — Ethnologische Mittheilungen aus Ungarn. I Jahrgang. 1887–88. Heft 2.
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The following paper was read by the Author :—

*On a METHOD of INVESTIGATING the DEVELOPMENT of INSTITUTIONS; APPLIED to LAWS of MARRIAGE and DESCENT.*

By EDWARD B. TYLOR, D.C.L., F.R.S.

FOR years past it has become evident that the great need of anthropology is that its methods should be strengthened and systematised. The world has not been unjust to the growing science, far from it. Wherever anthropologists have been able to show definite evidence and inference, for instance, in the development series of arts in the Pitt-Rivers Museum, at Oxford, not only specialists but the educated world generally are ready to receive the results and assimilate them into public opinion. Strict method has, however, as yet only been introduced over part of the anthropological field. There has still to be overcome a certain not unkindly hesitancy on the part of men engaged in the precise operations of mathematics, physics, chemistry, biology, to admit that the problems of anthropology are amenable to scientific treatment. It is my aim to show that the development of institutions may be investigated on a basis of tabulation and classification. For this end I have taken up a subject of the utmost real as well as theoretical interest, the formation of laws of marriage and descent, as to which during many years I have been collecting the evidence found among

between three and four hundred peoples, ranging from insignificant savage hordes to great cultured nations. The particular rules have been scheduled out into tables, so as to ascertain what may be called the "adhesions" of each custom, showing which peoples have the same custom, and what other customs accompany it or lie apart from it. From the recurrence or absence of these customs it will be our business to infer their dependence on causes acting over the whole range of mankind.

Years since, long before my collection of data approached its present bulk, and could be classified into the elaborate tables now presented, I became naturally anxious to know whether the labour had been thrown away, or whether this social arithmetic would do something to disclose the course of social history. The question was how to make the trial. I remembered a story I had once heard of Horace Vernet, that a friend asked him how he planned out his huge battle-pieces. The painter took the inquirer into his studio and began a picture for him by first touching in a bayonet in one corner of his canvas, then drawing the arm and sabre of the trooper slashing over the bayonet-thrust, and so on from one overlapping figure to the next till he reached the central group. It seemed to me that it would be well to begin thus in one corner of the field. The point I chose was a quaint and somewhat comic custom as to the barbaric etiquette between husbands and their wives' relatives, and *vice versa*: they may not look at one another, much less speak, and they even avoid mentioning one another's names. Thus, in America, John Tanner, the adopted Ojibwa, describes his being taken by a friendly Assineboin into his lodge, and seeing how at his companion's entry the old father and mother-in-law covered up their heads in their blankets till their son-in-law got into the compartment reserved for him, where his wife brought him his food. So in Australia, Mr. Howitt relates how he inadvertently told a native to call his mother-in-law, who was passing at some little distance; but the blackfellow sent the order round by a third party, saying reproachfully to Mr. Howitt, "You know I could not speak to that old woman." Absurd as this custom may appear to Europeans, it is not the outcome of mere local fancy, as appears on reckoning up the peoples practising it in various regions of the world, who are found to be about sixty-six in number, that is, more than one-sixth of the whole number of peoples catalogued, which is roughly three-hundred and fifty. Thus:—

*Avoidance.*

Between H. and W.'s Rel.	Mutual.	Between W. and H.'s Rel.
45	8	13

Now, on looking out from the schedules the adhesions of this avoidance-custom, a relation appears between it and the customs of the world as to residence after marriage. This is seen in the following computation of the peoples whose habit is for the husband to take up his abode with the wife's family permanently, or to do so temporarily and eventually to remove with her to his own family or home (the reverse of this does not occur), or for the husband at once to take home the wife.

*Residence.*

H. to W. 65	Removal 76	W. to H. 141
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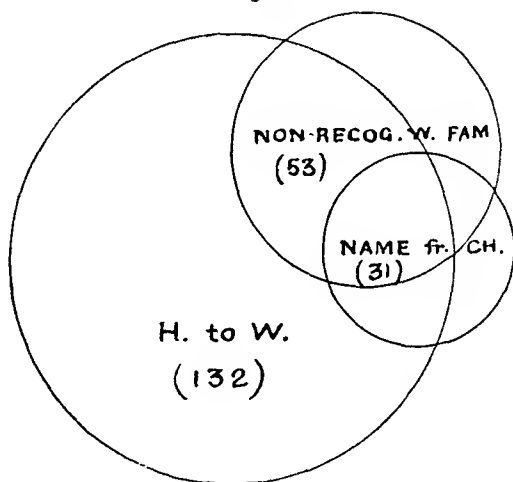
Now, if the customs of residence and the customs of avoidance were independent, or nearly so, we should expect to find their coincidence following the ordinary law of chance distribution. In the tribes where the husband permanently lives with his wife's family (sixty-five out of three hundred and fifty), we should estimate that ceremonial avoidance between him and them might appear in nine cases, whereas it actually appears in fourteen cases. On the other hand, peoples where the husband at marriage takes his wife to his home (one hundred and forty-one out of three hundred and fifty), would rateably correspond with avoidance between him and her family in eighteen cases, whereas it actually appears in nine cases only. Also, if the thirteen cases of avoidance between the wife and the husband's family were divided rateably among the different modes of residence, two or three cases should come among the peoples where the husband lives with the wife's family, but there are no such cases. On the other hand, five cases should be found among the peoples where the wife lives in the husband's home or family, but actually there are eight. Thus there is a well marked preponderance indicating that ceremonial avoidance by the husband of the wife's family is in some way connected with his living with them ; and *vice versâ* as to the wife and the husband's family. Hereupon, it has to be enquired whether the facts suggest a reason for this connexion. Such a reason readily presents itself, inasmuch as the ceremony of not speaking to and pretending not to see some well-known person close by, is familiar enough to ourselves in the social rite which we call "cutting." This, indeed, with us implies aversion, and the implication comes out even more strongly in objection to utter the name ("we never mention her," as the song has it). It is different, however, in the barbaric custom we are considering, for here the husband is none the less on friendly terms with his wife's people because they may not take any notice of one another. In fact, the expla-

nation of this ceremonial cutting may be simpler and more direct than in civilised Europe. As the husband has intruded himself among a family which is not his own, and into a house where he has no right, it seems not difficult to understand their marking the difference between him and themselves by treating him formally as a stranger. So like is the working of the human mind in all stages of civilisation, that our own language conveys in a familiar idiom the same train of thought; in describing the already mentioned case of the Assineboin marrying and taking up his abode with his wife's parents who pretend not to see him when he comes in, we have only to say that they do not *recognise* him, and we shall have condensed the whole proceeding into a single word. In this first example, it is to be noticed that the argument of a causal connexion of some kind between two groups of phenomena brings into view, so far at least as the data prove sound, a scientific fact. But we pass on to less solid ground in assigning for this connexion a reason which may be only analogous to the real reason, or only indirectly corresponding with it, or only partly expressing it, as its correlation with other connexions may eventually show. This important reservation, once stated, may be taken as understood through the rest of the enquiry.

Let us now turn to another custom, not less quaint-seeming than the last to the European mind. This is the practice of naming the parent from the child. When Moffat, the missionary, was in Africa among the Bechuana, he was spoken to and of, according to native usage, as Ra-Mary = father of Mary. On the other side of the world, among the Kasias of India, Colonel Yule mentions the like rule; for instance, there being a boy named Bobon, his father was known as Pabobon. In fact there are above thirty peoples spread over the earth who thus name the father, and, though less often, the mother. They may be called, coining a name for them, *teknonyms* peoples. When beginning to notice the wide distribution of this custom of *teknonymy*, and setting myself to reckon its adhesions, I confess to have been fairly taken by surprise to find it lying in close connection with the custom of the husband's residence in the wife's family, the two coinciding twenty-two times, where accident might fairly have given eleven. It proved to be still more closely attached to the practice of ceremonial avoidance by the husband of the wife's relatives, occurring fourteen times, where accident might have given four. The combination is shown on the diagram, fig. 1, the (approximate) numbers on which give the means of estimating the probable closeness of causal connection. Were the three customs so distantly connected as to be practically independent, the product of the corresponding fractions

$\frac{132}{350} \times \frac{53}{350} \times \frac{31}{350}$ , multiplied into the three hundred and fifty peoples would show that their concurrence might be expected to happen between once and twice in the list of peoples of the world. In fact it is found eleven times. Thus, we have their common causation vouched for by the heavy odds of six to one. Many of the firmest beliefs of mankind rest, I fear, on a less solid basis. In tracing out the origin of the group of customs in conformity with these conditions, it is not necessary to invent a hypothesis, as an account of the proceedings of the Cree Indians will serve as a "luminous instance" to clear up the whole situation. Among these Indians the young husband, coming to live with his wife's parents, must turn his back on

Fig. 1.



them, not speaking to them (especially not to his mother-in-law), being thus treated as a stranger till his first child is born ; whereupon he takes its name, and is called "father of So-and-so," and thenceforth attaches himself to his parents-in-law rather than to his own parents. That is to say, he is ceremonially treated as a stranger till his child, being born a member of the family, gives him a status as father of a member of the family, whereupon they consistently leave off the farce of not recognising him. When I brought this argument to the knowledge of Dr. G. A. Wilken, of Leyden, he pointed out to me that in his series of papers on "Primitive Forms of Marriage,"<sup>1</sup> where he

<sup>1</sup> G. A. Wilken, "Over de primitieve vormen van het huwelijk, &c.," in "Indische Gids," 1880, &c.

gives instances of the naming of fathers from children, he had stated this practice to be an assertion of paternity. Undoubtedly it is so on the father's part, and its being so is quite compatible with its being a recognition of him by the wife's kinsfolk, the two aspects belonging to one social fact.

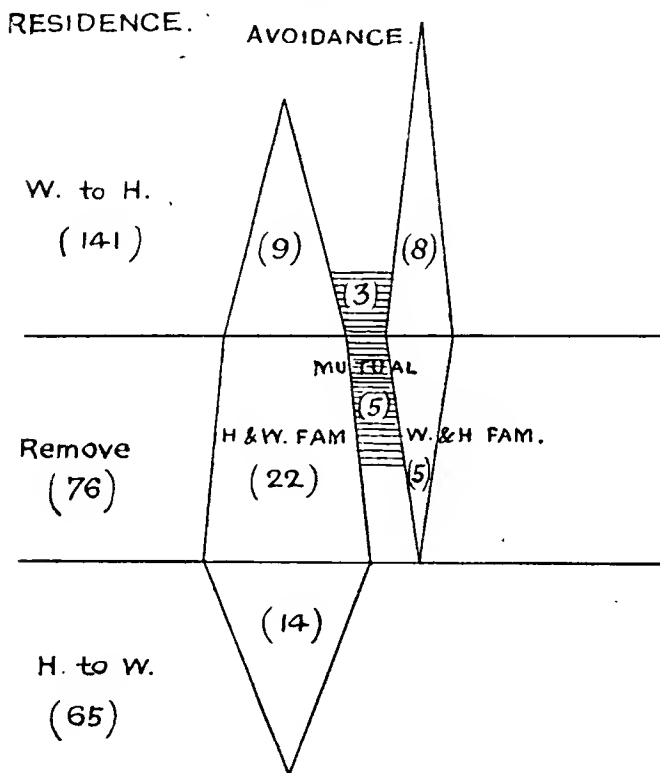
Taking the connection between residence and ceremonial avoidance to be substantiated by their relative adhesions, it is necessary to notice that there are cases where the husband, although he carries the wife away from the home of her parents, nevertheless goes through the form of avoiding them. This, under the circumstances, seems a motiveless proceeding, but is intelligible as a survival from a time when he would have lived with them. These cases belong mainly to the Malay District and to Australia. In the Malay District the habit of residence in the wife's family is still a notable institution of the country, though being fast superseded by householding on the Arab and European models. In Australia, the native custom is described as being that the husband takes his wife to his own home, while at the same time he carries out the etiquette of cutting his mother-in-law to a ludicrous extreme, with slight traces of the avoidance of the father-in-law. It appeared to me that on the present explanation this must indicate a recent habit of residence on the wife's side, and reference showed a law of the Kurnai tribe of Gippsland,<sup>1</sup> that when a native kills game, certain parts of the meat (of a kangaroo, the head, neck, and part of the back) are the allotted share of the wife's parents. As the duty of supplying game to the wife's household when the husband lives there is one of the best-marked points of matriarchal law, I wrote to Mr. Howitt, as the leading authority on Australian anthropology, suggesting that further enquiry would probably disclose evidence hitherto unnoticed as to the maternal stage of society subsisting in Australia. After examination made, Mr. Howitt replied:—"I am now satisfied that your surmises are quite correct," and therewith he sent details bearing on the question, especially an account by Mr. Aldridge, of Maryborough, Queensland, as to the practice of the tribes in his neighbourhood. This I will quote, as being a strongly marked case of residence on the wife's side. "When a man marries a woman from a distant locality, he goes to her tribelet and identifies himself with her people. This is a rule with very few exceptions. Of course, I speak of them as they were in their wild state. He becomes part of and one of the family. In the event of a war expedition, the daughter's husband acts as a blood-relation, and will fight and kill his own blood-relations if blows are struck by

<sup>1</sup> Fison and Howitt, "*Kamilaroi and Kurnai*," p. 207.

his wife's relations. I have seen a father and son fighting under these circumstances, and the son would most certainly have killed his father if others had not interfered."

The relative positions of the two groups of customs, residence and avoidance, may now be more completely shown, by the aid of the diagram, fig. 2.

Fig. 2.



Here the space representing residence is divided into three sections, viz., residence on the wife's side; the transitional stage of removal (where the couple begin married life in the wife's house, but eventually move); residence on the husband's side. According to the previous arguments, the ceremonial avoidance between the husband and the wife's family is taken to have arisen within the periods when he and they lived permanently or temporarily in contact, and to have continued by survival

into the period after this co-residence had ceased. There next appear the small group of eight cases of mutual avoidance, at once between the husband and the wife's family, and the wife and the husband's family. These consistently are found in the removal stage, where both kinds of residence meet, surviving into the stage of residence on the husband's side. Avoidance between the wife and the husband's family has the same range, but here the conditions producing it belong to both stages of residence, and there is no question of survival.

From this distribution of the avoidance-customs, it appears that in the parts of the world open to the present inspection, the three stages of residence have tended to succeed one another in the upward order of the diagram. Residence on the wife's side appears earliest, after this the removal stage, and latest, residence on the husband's side. For if it be supposed that the course of society was in the reverse direction, as would be represented by turning the diagram upside down, avoidance between the husband and the wife's family would be represented as arising in the stage when the husband lived away from it, while avoidance between the wife and the husband's family, which ought on this supposition to continue by survival into the stage of residence on the wife's side, is not found there. The avoidance-customs, though practically so trifling, are thus signals showing the direction of a movement, of which we shall more fully see the importance, namely, the shifting of habitual residence from the wife's family to the husband's.

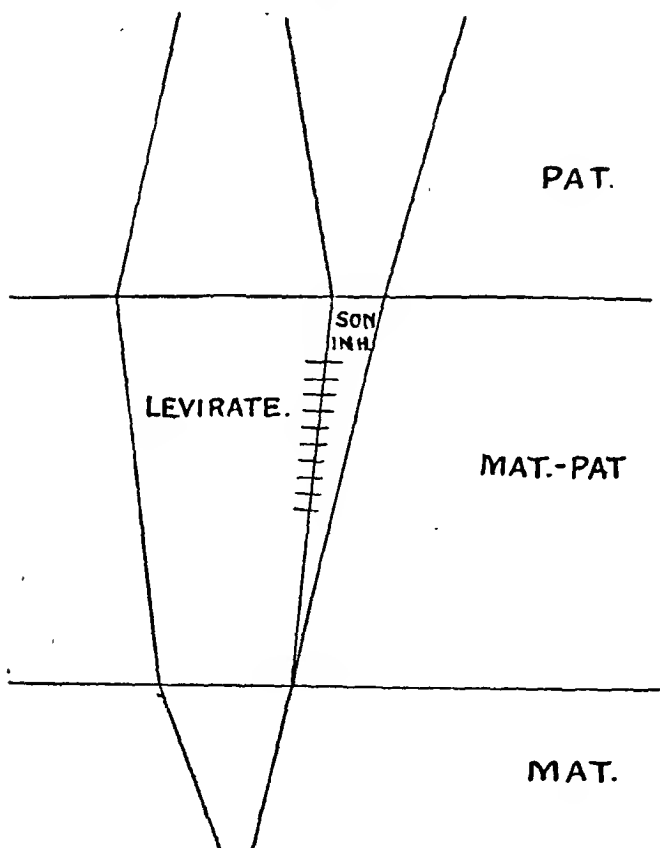
Let us now proceed to apply a similar method to the investigation of the great division of society into matriarchal and patriarchal. In the matriarchal system, descent in the family or clan is reckoned from the mother; authority is mainly on her side, the mother's brother being habitually guardian of the children; succession to rank and office, and inheritance of property, follow the same line passing to the brother or to the sister's son. In the patriarchal system descent is from the father; he has the power over wife and children; succession and inheritance are from him to his offspring. Between these extreme stages lies an intermediate or transitional stage in which their characteristics are variously combined. The terms patriarchal and matriarchal not being quite appropriate, I shall use in preference for the three stages the terms maternal, maternal-paternal, and paternal. The classification is necessarily somewhat vague, but I think will be found to have sufficient precision for the problem of determining the direction in which mankind has tended to move from one of the stages to another. In dealing with this problem certain customs relating to marriage law will be used as indicators.

Among a large proportion of the nations of the world up to the middle levels of culture, the re-marriage of widows is arranged, and more or less enforced, but the regulations are framed on two distinct principles. On the first principle the widow becomes the wife of her husband's brother, or near kinsman, according to some recognized order of precedence of claim. The word "levirate," from *levir* = husband's brother, has become the accepted term for this institution, but its sense must in most cases be extended to take in a series of kinsmen, among whom the brother-in-law only ranks first. Unfortunately, it has seldom been thought worth while to ascertain this precise order, which might throw light on family structure, as in an account drawn up by Mr. Howitt of the practice in Australian tribes where any man is eligible to succeed to the widow, if he stands in the relation of elder or younger brother to the deceased, beginning with actual brothers on the male or female side, according to the rule of descent in the tribe, and extending to tribal brothers who are in our terminology cousins, more or less near. The levirate appears in its various forms among one hundred and twenty peoples in my list, or about one in three in the world. On taking out its adhesions it seems sufficiently accounted for as a custom of substitution, belonging to the period when marriage is a compact not so much between two individuals as between two families, often made when the couple are infants unable to understand it, in fact sometimes before their birth. That the levirate forms part of this family transaction is consistent with other customs more or less associated with it, viz., that when a wife dies or turns out ill her family are bound to replace her by another, a rule which sometimes even holds for betrothal, and that the widow is not allowed to marry out of her husband's family unless by leave of his kinsmen, who have the choice of keeping her, or parting with her, usually for a price. The social distribution of the levirate is shown in fig. 3 to extend through all three social stages. It is in the maternal-paternal stage that it comes into competition with the second principle, unknown in the maternal stage, in which the father's widows pass by inheritance to his sons, especially the eldest son taking his stepmothers. A small but important group of cases forms a bridge between the two principles of levirate and filial succession, combining both in the same nation. This combination is well shown in Africa, where on a chief's death the head wife will pass by levirate to his brother, while her son, the new chief, will inherit a crowd of stepmothers, a less onerous legacy indeed than may seem, as they are practically slaves who hoe and grind corn for their own living. Looking at the distribution of these groups of customs,

it is seen to be only compatible with the view that the paternal rule followed the maternal, bringing with it even while its prevalence was but partial, the principle of paternal widow-inheritance.

The quaint custom of the *couvade* has now to be considered

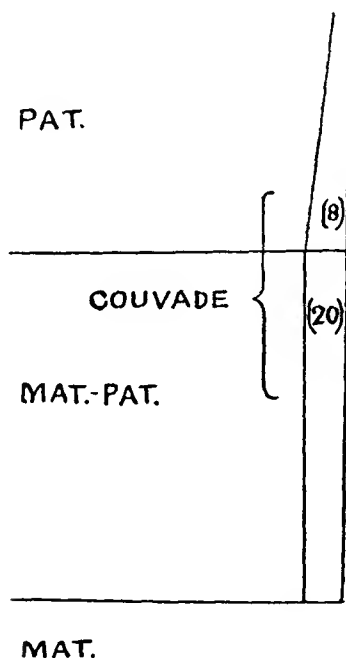
Fig. 3.



from the same point of view. In this the father, on the birth of his child, makes a ceremonial pretence of being the mother, being nursed and taken care of, and performing other rites such as fasting and abstaining from certain kinds of food or occupation, lest the new-born should suffer thereby. This custom is known in the four quarters of the globe. How sincerely it is still accepted appears in a story of Mr. Im Thurn, who on a

forest journey in British Guiana noticed that one of his Indians refused to help to haul the canoes, and on enquiry found that the man's objection was that a child must have been born to him at home about this time, and he must not exert himself so as to hurt the infant. In the Mediterranean district it is not only mentioned by ancient writers, but in Spain and France, in or near the Basque country, it went on into modern times; Zamacola, in 1818, mentions, as but a little time ago, that the mother used to get up and the father take the child to bed. Knowing the tenacity of these customs, I should not be surprised

Fig. 4.



if traces of couvade might be found in that district still. Now examining the distribution of the couvade by the diagram, Fig. 4, we see that this farcical proceeding does not appear in the maternal stage, but arising in the maternal-paternal, at once takes its strongest development of twenty cases; in the paternal the number falls to eight cases, leading to the inference that here it is only kept up in dwindling survival.

Looking at this position, I must now argue that the original interpretation of the couvade given by Bachofen in his great

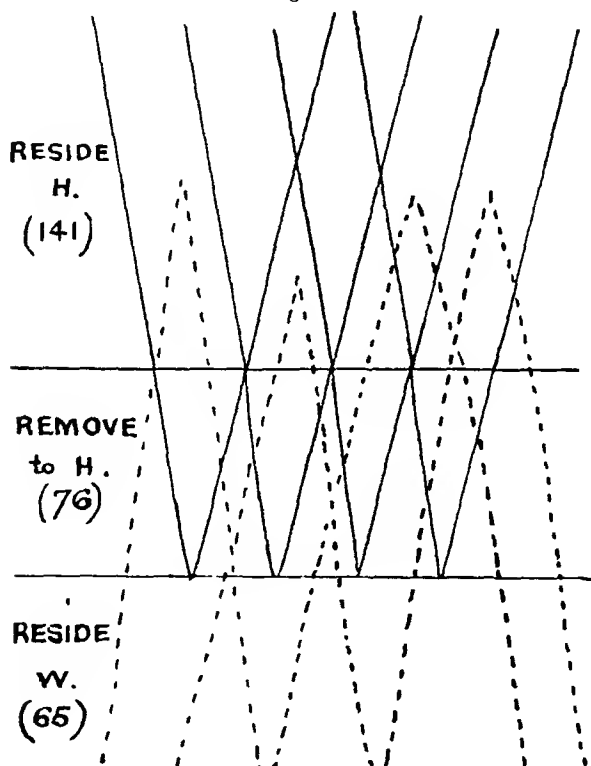
treatise<sup>1</sup> in 1861, and supported by Giraud-Teulon, fits substantially with the facts, and is justified by them. He takes it to belong to the turning-point of society when the tie of parentage, till then recognised in maternity, was extended to take in paternity, this being done by the fiction of representing the father as a second mother. He compares the couvade with the symbolic pretences of birth which in the classical world were performed as rites of adoption. To his significant examples may be added the fact that among certain tribes the couvade is the legal form by which the father recognizes a child as his. Thus this apparently absurd custom, which for twenty centuries has been the laughing-stock of mankind, proves to be not merely incidentally an indicator of the tendency of society from maternal to paternal, but the very sign and record of that vast change.

The distribution of customs in figs. 3 and 4 is only compatible with a tendency of society to pass from the maternal to the paternal systems, the maternal being placed as earliest from the absence of survivals from other stages extending into it, as they freely do into the paternal, which is therefore placed as latest. The argument is a geological one. Just as the forms of life, and even the actual fossils of the Carboniferous formation, may be traced on into the Permian, but Permian types and fossils are absent from the Carboniferous strata formed before they came into existence, so here widow-inheritance and couvade, which, if the maternal system had been later than the paternal, would have lasted on into it, prove by their absence the priority of the maternal. Thus the present method confirms on an enlarged and firm basis the inference as to the antiquity of the maternal system arrived at by the pioneers of the investigation, Bachofen and McLennan, and supported by the later research of a generation of able investigators—Morgan, Lubbock, Bastian, Giraud-Teulon, Fison, Howitt, Wilken, Post, Lippert, and others. By this it is not, however, meant to imply that the maternal form of family as here set forth represents the primitive condition of mankind, but that it is a stage through

<sup>1</sup> J. J. Bachofen, "Das Mutterrecht," pp. 17, 255; Giraud-Teulon, "Les Origines du Mariage," p. 138. In my account of the couvade, "Early History of Mankind," Chap. x, I have laid stress on the magical-sympathetic nature of a large class of couvade rites as implying a physical bond between parent and child; thus an Abipone would not take snuff lest his sneezing might hurt his newborn baby, and a Carib father must abstain from eating sea-cow lest his infant should get little round eyes like it. This motive, which is explicitly or implicitly recognised by the savages themselves, certainly forms part of the explanation of the couvade. It is, however, secondary, being due to the connexion considered as subsisting between parent and child, so that these sympathetic prohibitions may be interpreted as originally practised by the mother only, and afterwards adopted by the father also.

which the inhabitants of a great part of the world now in the paternal appear to have passed, and which still continues in force over considerable tracts of every part of the globe except Europe. It seems probable that this maternal system arose out of an earlier and less organised and regulated condition of human life. As to this problem, however, though the present schedules are not devoid of information, I have not been able

Fig. 5.



to bring the general evidence into shape sufficiently to justify my offering a theory here.

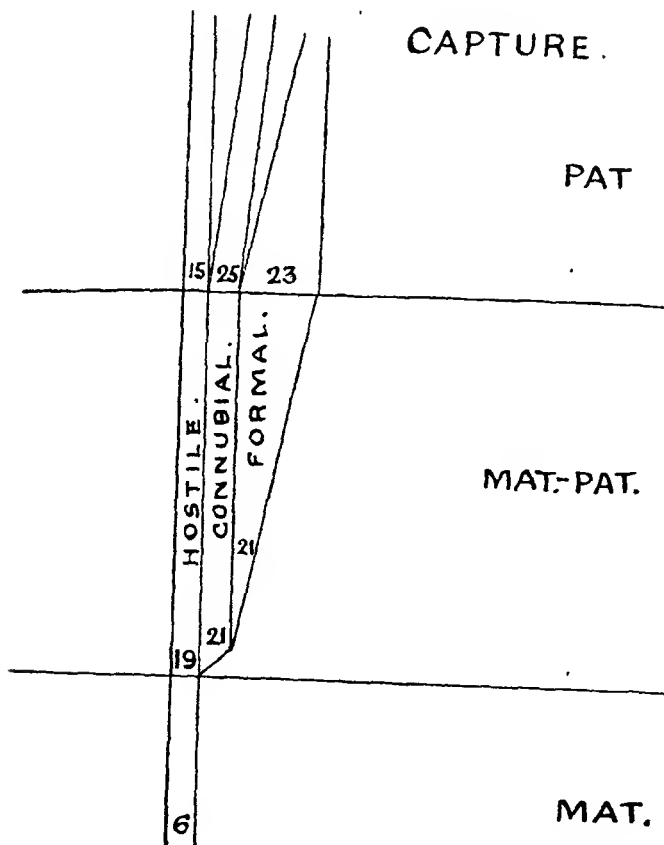
The analogy has already come into view between the division of society according to residence, and according to the maternal and paternal systems. This relation, the reality of which is evident from mere consideration of the difference as to family life which must ensue from the husband living in the wife's house or the wife living in the husband's, may be corroborated

from the schedules. Thus the number of coincidences between peoples where the husband lives with the wife's family and where the maternal system prevails, is naturally large in proportion, while the full maternal system as naturally never appears among peoples whose exclusive custom is for the husband to take his wife to his own home. But as I have pointed out, the maternal and paternal systems are not each a definite institution, but combinations in which more or less strictly the authority, descent, succession, inheritance follow the female or the male side. The imperfection of my schedules makes it desirable for me to postpone an attempt to work out numerically the intricate problem of the mutual relations of these social rules till more perfect data are accessible. I have made, however, a rough sketch illustrative of the hypothesis suggested by the diagrams figs. 3 and 4, namely that in the one simple fact of residence we may seek the main determining cause of the several usages which combine to form a maternal or paternal system. This sketch, fig. 5, is meant to suggest the social movement which the schedules seem to imply. Division according to residence on the female or male side is taken as the fundamental fact, and the lines show the institutions of female descent, avuncular authority, &c., arising in the stage of residence on the female side, and extending into the stages of removal and residence on the male side. Within these two latter stages it is that male descent, paternal authority, &c., arise and extend onward in history. This direction is indeed consistent with what our own knowledge of human nature would lead us to expect. We can well understand how when the man lives in his wife's family his power will count for little against the combined authority of her maternal uncles and brothers, whereas when he takes her to his own home, he is apt to become master of the household; and we should expect the rules of descent, succession, and inheritance to follow the same order. Actual record of such transition is very rare, but at any rate one observer, the Hon. J. W. Powell, of the Bureau of Ethnology at Washington, has had both the opportunity to see and the skill to see what he was seeing, with the result of convincing himself that the transition from maternal to paternal society has in great measure depended on residence. I quote a passage of a letter from him:—"It would seem from such opportunities as I have had to collect facts in the field that hunting and other parties are frequently organised in such a manner that the male members of a clan group proceed together in company with their wives and children. Under such circumstances the control of the family necessarily falls into the hands of the husbands and fathers." This happens among the Pueblo Indians, a matriarchal

people with female descent, whose clans, in consequence of the scarcity of water for irrigation in their desert region, are obliged to separate widely for the cultivation of lands at a distance from the central Pueblo. The result is that the control of families and the training of children are temporarily taken out of the hands of their own kin on the mother's side, and with the acquisition of cattle in these new homes comes the tendency to settle there permanently. Observation of these facts led Major Powell to adopt the hypothesis that clanship by female descent passed in this way into clanship by male descent by the segregation of clans for industrial purposes.

The next diagram, fig. 6, throws more light on the great social transformation. It shows the distribution of the practice

Fig. 6.



of marriage by capture. When the accounts of national custom are classified they show that capture (which belongs to over one hundred of the peoples scheduled) can be more or less accurately divided into three kinds:—Hostile capture, when warriors of one tribe bring away as captives women of another tribe is a feat of arms praised in history short of the highest levels of culture. There were fierce Indians of the Pampas who held that their god, the Great Eagle, told them to live by making war on all other tribes, slaying their men and carrying off their women and children. The same spirit is heard in the hopes of Sisera's host to divide the spoil, to every man a damsel or two. Looking at hostile capture from the anthropological point of view, we have to notice that it exists equally through the three stages of society, from maternal to paternal. Now it obviously conflicts with full matriarchal institutions that a man should bring in a captive wife, for he cannot take her home to his mother-in-law. To understand such a custom appearing within the range of matriarchy at all, we must remember that a captive has no rights, so that what happens to her does not immediately affect the regular custom of the tribe, which applies to native free women. Yet even here the tendency of capture must always have been to upset the maternal arrangements. When capture comes to be an accepted mode of marriage between or among tribes or clans who live at peace and habitually intermarry, it is evident that such "connubial capture," as it is described on the diagram, can only consist with the paternal system, inasmuch as the husband necessarily carries the wife to his own home, thereby setting on foot a paternal household. This is true also of the cases where the capture has become a merely formal ceremony, accompanying a marriage settled beforehand, for the very form of capture involves the bridegroom coming with his friends to carry the bride to his home. This is the interpretation of the fact, made evident in the diagram, that connubial and formal capture belong only to the intermediate stage where paternal institutions are arising, and to the later stage where they are fully established. The effect of capture in breaking up the maternal system, and substituting the paternal for it, has thus to be taken into account as a serious factor in social development. There is at least one region of the world where the operation may be seen going on at this day—the Malay Islands. To quote the concise description by Riedel of the matrimonial arrangements of the Babar Archipelago:—"The men follow the women, and live in their houses. The children also belong to the wife's family. If a man is rich enough he may marry seven wives, who all remain in the houses of their parents. A man who has many wives is

respected. The robbery of a wife from another clan (*negari*) is an honour, and the children follow the father, with or without payment of the fine attached to the deed. Smaller or weaker clans even demand no fine."<sup>1</sup> In the Kisar and Wetar island groups a like state of things appears, the maternal system being the recognised rule, but always liable to pass into the paternal system by capture, which brings wife and children into the husband's hands.

At this point it will be convenient to examine two institutions of early marriage law, namely, exogamy and classificatory relationship. The principle of exogamy was brought prominently into view fifty years ago, by Sir George Grey,<sup>2</sup> when he described the native Australian rule for a man not to marry a woman of the same family name or bearing the same animal-crest or kobong as himself; and called attention to the coincidence of this with the North American system of clans named from totem animals, a man being bound to marry outside his own totem or clan. Mr. J. F. McLennan<sup>3</sup> gave these customs the name of exogamy or "marrying-out," and showed them to belong to "a most widely prevailing principle of marriage law among primitive races." Much information has since then come in, with the result of showing that exogamy has hardly to do with the capture of wives in war between alien nations, but rather with the regulation of marriages within groups of clans or tribes who have connubium; such clans or tribes may be more or less at strife, but they acknowledge ties of kindred and are usually allied by language. It is now also understood that a people may at once practice endogamy or "marrying-in" within its borders, and exogamy or "marrying-out" of its clans with one another. The situation may be understood among the Hindus, where a man must marry in his caste, but within that caste must not marry in his own gotra or clan. The effect of an exogamic rule is similar whether clan-ship follows the female or male line of descent. Next, as to the principle of classificatory relationship, an early mention of this is by Father Lafitau,<sup>4</sup> above one hundred and fifty years ago, who states that "among the Iroquois and Hurons all the children of a cabin regard all their mother's sisters as their mothers, and all their mother's brothers as their uncles, and for the same reason they give the name of fathers to all their

<sup>1</sup> Riedel, "De Sluik- en Kroescharige Rassen tusschen Selebes en Papua," p. 351; see 415, 448.

<sup>2</sup> Grey, "Journals of Two Expeditions in N.W. and W. Australia," Vol. II, p. 225.

<sup>3</sup> J. F. McLennan, "Primitive Marriage," pp. 48, 130.

<sup>4</sup> Lafitau, "Mœurs des Sauvages Américains," Paris, 1724, Vol. I, p. 552.

father's brothers, and aunts to all their father's sisters. All the children on the side of the mother and her sisters, and of the father and his brothers, regard each other mutually as brothers and sisters, but as regards the children of their uncles and aunts, that is, of their mother's brothers and father's sisters, they only treat them on the footing of cousins. . . . In the third generation this changes, the great uncles and great aunts become again grandfathers and grandmothers of the children of those whom they called nephews and nieces. This continues always in the descending line according to the same rule." In our own time, Lewis H. Morgan, living among the Iroquois as an adopted Indian, was struck with this system of relationships, so unlike what he had been brought up among, and which he at first thought to be a peculiar invention of his Iroquois. But finding, on enquiry, that it extended to other North American tribes, he eventually by circulating interrogatories succeeded in collecting a great series of systems of relationship, in which he established the wide prevalence of classificatory systems, as he called them from the relatives being grouped in classes.<sup>1</sup> Under the term classificatory systems, Mr. Morgan included not only those approximating to the Iroquois type, but a much simpler and ruder plan prevalent in Polynesia; it is, however, convenient for me to confine my remarks here to the former group only. This system, as found among the American Indians, Mr. Morgan showed to be closely analogous to that of the Dravidian nations of Southern Hindustan. This latter is a well-known source of perplexity to a newly appointed English civilian, who may be told by a witness that his father was sitting in the house, but presently the same witness mentions his father as coming in from the field; the native is sharply reproved by the judge for contradicting himself, whereupon he explains, it was my "little father," by which he means his father's younger brother.

I am placing together the two institutions, exogamy and classificatory relationship, inasmuch as they are really connected, being in fact two sides of one institution. This was made out eight years ago, by the Rev. Lorimer Fison, in the work on the Kamilaroi and Kurnai tribes of Australia by him and Mr. Howitt.<sup>2</sup> This important explanation is still scarcely known to anthropologists, nor indeed, have I much right to reproach others with neglecting it, for I reviewed Fison and Howitt's book without distinctly realising the bearing of this argument on the theory of exogamy, which only came round to

<sup>1</sup> L. H. Morgan, "Systems of Consanguinity and Affinity of the Human Family" (Smithsonian Contributions, 1871).

<sup>2</sup> Fison and Howitt, "Kamilaroi and Kurnai," 1880, p. 76.

me lately in a way which I had better now describe, as it will enable me to explain shortly and plainly the whole problem. In tabulating the nations of the world, I found a group of twenty-one peoples whose custom as to the marriage of first cousins seemed remarkable ; it is that the children of two brothers may not marry, nor the children of two sisters, but the child of the brother may marry the child of the sister. It seemed obvious that this "cross-cousin marriage," as it may be called, must be the direct result of the simplest form of exogamy, where a population is divided into two classes or sections, with the law that a man who belongs to Class A can only take a wife of Class B. Such a division, for instance, is familiar in Melanesia. Dr. R. H. Codrington describes it in the Banks Islands, where the natives have two families, called *veve* = mother, which implies that descent follows the mother's side, and a man must marry a wife of the other mother from himself, or as they say, not on his own side of the house but on the other. Thus, taking A, a, B, b, as males and females of the class A and B, and bearing in mind that the mother's children are of her class, but the father's children of the opposite class to his, we have :—

Fig. 7.

Two sisters, a, a, their        : Children, A, a, are of same class = tribal brother and sister = unmarriageable.	Two brothers, A, A, their       : Children B, b, are of same class = tribal brother and sister = unmarriageable.	Brother and sister, A, a, their       : Children B, a, are of different class = tribal cousins = marriageable.
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Having come to this point, it seemed to me that I had seen something like it elsewhere, and on looking back to "Kamilaroi and Kurnai" I found that Fison had thus worked out the origin of the Turanian classificatory system, as Morgan calls that including the above-mentioned systems of North America and India, with others. Fig. 8 puts concisely the main features of the argument as to a man's kin.

Fig. 8.

His  
father's brother's child  
or  
mother's sister's child } is (tribal) brother or sister,

Therefore

father's brother is (tribal) father,  
 mother's sister is (tribal) mother,

His

father's sister's child	} is tribal (cousin).
or	
mother's brother's child	

Therefore

father's sister is (tribal) aunt,  
 mother's brother is (tribal) uncle.

Though not proposing to enter fully into the deduction of classificatory relationships in all their varieties from the rule of exogamy, it is necessary to point out that the form of exogamy here contemplated is the simplest or dual form, in which a people is divided into two intermarrying classes. Systems of exogamy which are dual in their nature, that is, consisting of two classes or groups of classes, stand in direct connection with cross-cousin marriage and classificatory relationship. But if the number of exogamic divisions is not dual, if there are for instance three clans, and a man of one clan may take a wife of either of the other two clans, it is readily seen that the argument of fig. 7 breaks down. Although at present only prepared to deal with exogamy and classificatory relationship in their dual form, I may notice that the treatment of the problem by the method of adhesions strengthens the view, not wanting in other evidence, that the dual form of exogamy may be considered the original form. In reckoning from the present schedules the number of peoples who use relationship names more or less corresponding to the classificatory systems here considered, they are found to be fifty-three, and the estimated number of these which might coincide accidentally with exogamy were there no close connexion between them, would be about twelve. But in fact the number of peoples who have both exogamy and classification is thirty-three, this strong coincidence being the measure of the close causal connexion subsisting between the two institutions. The adherence is even stronger as to cross-cousin marriage, of which twenty-one cases appear in the schedules, no less than fifteen of the peoples practising it being also known as exogamous. Here, indeed, the relation is not one of derivation, but of identity, the cross-cousin rule being actually a partial form or imperfect statement of the law of exogamy itself. Such adhesions between two or more customs have been already recognised as proving the existence of causal connexion, but it has now to be pointed out that they serve another purpose. The

connexion, when proved, reacts on the evidence by which it was proved. When once it has been shown that cross-cousin marriage is part and parcel of exogamy, it may be argued that all the twenty-one peoples practising cross-cousin marriage are to be set down as exogamous. Now as only fifteen of them are expressly recorded to be so, the list of exogamous nations of the world has to be increased by six. So, classificatory relationship being evidence that the peoples practising it are or have been exogamous, this will add some twenty more to the list of nations among whom further investigation will probably disclose record that exogamic society once prevailed or still prevails. Even if no direct record is forthcoming, the indirect proof may with due caution be sufficient for placing them in the exogamous group, which may thus number above one hundred peoples out of the three hundred and fifty of the world. Those who remember the sharp discussion between McLennan and Morgan years ago, and the view that the classificatory relationships were a mere system of addresses, will be struck with the way in which the controversy is likely to end. For myself I hardly know whether I feel more glad or sorry that my old friend McLennan to the day of his death never knew that Morgan and he, who believed themselves adversaries, were all the while allies pushing forward the same doctrine from different sides.

It thus appears that the number of nations who have the system of intermarrying clans is larger than has been known. But even this by no means measures the full importance of exogamy as a factor in the constitution of society. Anthropologists have long had before them the problem of determining how far clan-exogamy may have been the origin of the prohibited degrees in matrimony so variously defined in the laws of nations. The yet larger problem has been opened, how far laws of permission and prohibition of marriage may have led nations to define relationships and give them names, distinguishing for instance uncles from fathers, and cousins from brothers. It may, I think, conduce to the solution of these problems to notice two ways in which the collation of the present tables bears on the meaning and origin of exogamy.

There are conditions of society under which exogamy is found side by side with wife-capture, so that a barbaric marriage often involves both in one and the same act, as when a Tatar and a party of his friends, all armed to the teeth, ride off to the tents of a distant clan, and thence with simulated or even real violence carry off a bride. But on reckoning up the peoples among whom this combination of capture and exogamy is found, the number, though enough to show that they co-exist freely, falls short of what would justify the inference that they are cause and effect.

Moreover, it appears that this co-existence belongs especially to the paternal stage of society, and to the maternal-paternal, in which paternal influence is partly established. This is intelligible enough from what has been already said as to the effect of capture in setting on foot paternal institutions, from its very outset, by bringing the wife into the husband's hands and home. We are thus led to a more fundamental test of the position of exogamy, by enquiring whether it existed in that earliest known stage of the maternal system of society, where the husband lives in the wife's family. The schedules show that there are in different parts of the world twelve or thirteen well-marked exogamous peoples whose habit of residence is for the husband to join the wife's family.<sup>1</sup> This state of things seems to me to prevent our regarding exogamy as a result of capture, it being plain that the warrior who has carried a wife captive from a hostile tribe does not take up his abode in her family. If capture leads to any form of exogamy, this must, I think, be a paternal form, and if it be admitted that the maternal form is earlier, then it follows that capture is inadmissible as the primary cause of exogamy.

More than twenty years ago, in compiling a list of nations practising this custom of marrying out of the tribe or kin, I noticed that in any full discussion of the subject would have to be considered the wish to bind different tribes together in friendship by intermarriage.<sup>2</sup> Compiling the present tables has brought together observations to this effect. Morgan, describing how the alliance of the Iroquois tribes, made up of intermarrying clans, formed a bond of union throughout the national league, writes: "It was the boast of the Iroquois that the great object of their confederacy was peace; to break up the spirit of perpetual warfare, which had wasted the red race from age to age."<sup>3</sup> Another group of North American tribes, the Tinnéh, on the Arctic circle, are divided into three castes, their rule being that, for instance, a Chit-sangh may not marry a Chit-sangh. When this does take place, the persons are ridiculed and laughed at, the man is said to have married his sister, even though she may be from another tribe, and there be not the slightest connection by blood between them. Hardisty, who gives these details, remarks:—"One good thing proceeded from the above arrangement, it prevented war between two tribes who were naturally hostile."<sup>4</sup> The Bogos of Abyssinia are exogamous, and of

<sup>1</sup> Kasia, Garo, Menangkabau and Padang, Banks Islands, Mortlock Islands, Chiroki, Delaware, Iroquois, Mandan and Minitari, Moqui, Tlinkit, Arawak.

<sup>2</sup> "Early History of Mankind," p. 286.

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<sup>4</sup> "Smithsonian Report," 1866, p. 315.

them Munzinger reports that they are closely bound together by reciprocal marriages, "so that internal war is almost impossible. Blood-quarrels among the Bogos are always settled very quickly, whilst the smallest collision with the adjoining tribes leads to everlasting wars."<sup>1</sup> Du Chaillu writes of Ashango-land, "tribes and clans intermarry with each other and this brings about a friendly feeling among the people. People of the same clan cannot intermarry with each other."<sup>2</sup> Thus, it seems that when Plutarch asks in the "Roman Questions," "Why do they not marry women near of kin?" he has some reason in setting down as one possible answer, "Whether from their wishing to increase friendships by marriages, and to acquire many kinsfolk, giving wives to others and receiving (wives) from them."<sup>3</sup>

On looking at the distinction between endogamy and exogamy from this point of view, it will be seen that there is a period in the growth of society when it is a political question of the first importance. While the vast forest or prairie still affords abundant food for a scanty population, small hordes may wander, or groups of households may be set up, each little tribe or settlement cut off from the rest, and marrying within its own border. But when tribes begin to adjoin and press on one another and quarrel, then the difference between marrying-in and marrying-out becomes patent. Endogamy is a policy of isolation, cutting off a horde or village, even from the parent-stock whence it separated, if only a generation or two back. Among tribes of low culture there is but one means known of keeping up permanent alliance, and that means is intermarriage. Exogamy, enabling a growing tribe to keep itself compact by constant unions between its spreading clans, enables it to overmatch any number of small intermarrying groups, isolated and helpless. Again and again in the world's history, savage tribes must have had plainly before their minds the simple practical alternative between marrying-out and being killed out. Even far on in culture, the political value of intermarriage remains. "Matrimonial alliances increase friendship more than aught else," is a maxim of Mohammed. "Then will we give our daughters unto you, and we will take your daughters to us, and we will dwell with you, and we will become one people," is a well known passage of Israelite history.

Exogamy lies far back in the history of man, and perhaps no observer has ever seen it come into existence, nor have the precise conditions of its origin yet been clearly inferred. Even the

<sup>1</sup> Munzinger, "Sitten und Recht der Bogos," p. 10.

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historical relation between exogamy and the system of classes known as totemism is not fully cleared up; whether as Prof. Robertson Smith takes it,<sup>1</sup> totemism supplied the necessary machinery for working a law of exogamy, or whether exogamy itself led to totemism. But as to the law of exogamy itself, the evidence shows it in operation over a great part of the human race as a factor of political prosperity. It cannot be claimed as absolutely preventing strife and bloodshed, indeed, it has been remarked of some peoples, such as the Khonds and the Banks Islanders, that the intermarrying clans do nevertheless quarrel and fight. Still by binding together a whole community with ties of kinship and affinity, and especially by the peacemaking of the women who hold to one clan as sisters and to another as wives, it tends to keep down feuds and to heal them when they arise, so as at critical moments to hold together a tribe which under endogamous conditions would have split up. Exogamy thus shows itself as an institution which resists the tendency of uncultured populations to disintegrate, cementing them into nations capable of living together in peace and holding together in war, till they reach the period of higher military and political organisation. Seen from this point of view, the remarkable fact is more easily understood that exogamy, passing on from the maternal to the paternal stage of society, shifts its prohibitions from the female to the male line of descent, now allowing marriages which it treated formerly as incestuous, while prohibiting others which it formerly allowed without scruple. This transformation has been taking place within recent times among Malay and American tribes, and seems to be even going on still, it making no difference politically whether kinship follows the female or male line, if only marrying-out causes the requisite intermixture of the clans. In this connexion it is worth while to notice that there are a small number of peoples in different parts of the world, who have a rule of exogamy not depending on kinship at all. For instance, Piedrahita<sup>2</sup> relates of the Panches of Bogota, that those of one town did not marry any woman thereof, as all held themselves brothers, and the impediment of kinship was sacred to them, but such was their ignorance that if a sister were born in a different town from her brother, he was not prevented from marrying her. An anthropologist, with the list before him of the peoples who prohibit a man from marrying in his own village, might explain this not as a result of ignorance, but as an extreme case of what may be called "local exogamy."

<sup>1</sup> W. Robertson Smith, "Kinship and Marriage in Early Arabia," p. 184.

<sup>2</sup> Piedrahita, "Historia General de las Conquistas del Nuevo Reyno de Granada," 1688, page 11.

The results here brought forward make no approach to exhausting the possible inferences to be drawn from the tables. These need not even be confined to working out the development of customs found in existence somewhere on the globe, but may in some measure restore the knowledge of forms of society now extinct. Interesting, however, as these problems are, I am more anxious to bring under discussion the method by which they are here treated, how imperfectly I am well aware. The interpretations offered will have to be corrected, the tabulated material improved in quantity and quality, and the principles it involves brought out more justly, yet at any rate it will remain clear that the rules of human conduct are amenable to classification in compact masses, so as to show by strict numerical treatment their relations to one another. It is only at this point that speculative explanation must begin, at once guided in its course and strictly limited in its range by well-marked lines of fact to which it must conform. The key of the position is, as that veteran anthropologist, Prof. Bastian, of the Berlin Museum, is never weary of repeating, that in statistical investigation the future of anthropology lies. As soon as this is systematically applied, principles of social development become visible. Even the diagrams of this paper may suffice to show that the institutions of man are as distinctly stratified as the earth on which he lives. They succeed each other in series substantially uniform over the globe, independent of what seem the comparatively superficial differences of race and language, but shaped by similar human nature acting through successively changed conditions in savage, barbaric, and civilised life.

The treatment of social phenomena by numerical classification will, it must be added, react on the statistical material to which the method is applied. It is in classifying the records of tribes and nations that one becomes fully aware of their imperfect and even fragmentary state. The descriptions happily tend to correct one another's errors, but the great difficulty is blank want of information. As for extinct tribes, and those whose native culture has been re-modelled, there is nothing to be done. But there are still a hundred or more peoples in the world, among whom a prompt and minute investigation would save some fast vanishing memory of their social laws and customs. The quest might be followed up internationally, each civilised nation taking in hand the barbaric tribes within its purview. The future will, doubtless, be able to take care of itself as to most branches of knowledge, but there is certain work which if it is to be done at all, must be done by the present.

## DISCUSSION.

The PRESIDENT felt sure that no one would have appreciated Dr. Tylor's memoir more justly, or would have welcomed it more warmly, than Mr. Herbert Spencer, whose efforts to erect a science of sociology upon an inductive basis were well known. Mr. Spencer, as we all remember, went to great cost, and much exerted himself to obtain a collection of the customs of all available nations, savage and civilised, arranged in a uniform and orderly manner for purposes of intercomparison. The result was the publication of an amount of material that filled four very large folio volumes. Unfortunately he had been obliged to delegate to others the task of compilation, and the work was not carried out as accurately as was desirable, or even as completely, notwithstanding its bulk. Much the same may be said of another and a different collection. Dr. Tylor has, on the contrary, collected a mass of well sorted and highly considered information, by means of a sustained and scholarly investigation, extending over many years, and there could be little doubt that a publication of his compact notes, supplemented it might be by the notes of other anthropologists, would be of itself a most valuable and acceptable work. Dr. Tylor's memoir dealt both with a method and with conclusions; it was of the method only that he (Mr. Galton) would now speak. It consisted in ascertaining the degree in which the concurrence of certain customs was exceptionally frequent. He thought that the degree of interdependence, to which the various degrees of exceptional frequency testified, might with advantage be expressed in terms of a scale, in which 0 represented perfect independence, and 1 complete concurrence. By doing so, the values of the various concurrences would become more clear. As an example of what he meant, he would refer to a scale used in certain psycho-physical inquiries and discussed in Fechner's book, where the true significance of the various percentages of success and failure was tabulated.

It was extremely desirable for the sake of those who may wish to study the evidence for Dr. Tylor's conclusions, that full information should be given as to the degree in which the customs of the tribes and races which are compared together are independent. It might be, that some of the tribes had derived them from a common source, so that they were duplicate copies of the same original. Certainly, in such an investigation as this, each of the observations ought, in the language of statisticians, to be carefully "weighted." It would give a useful idea of the distribution of the several customs and of their relative prevalence in the world, if a map were so marked by shadings and colour as to present a picture of their geographical ranges.

Professor FLOWER remarked upon the great value of Dr. Tylor's paper, congratulating him on the application of a rigid statistical method to a research which had generally been conducted on vague

and uncertain lines. It was, however, perfectly obvious that the value of such a method depended entirely upon the units of comparison being of equivalent value, and this seemed to him to be a very great difficulty when dealing with groups of mankind. He had, however, no doubt that Dr. Tylor had taken every means in his power to eliminate the errors which might arise from this source.

Mr. G. BERTIN, after remarking that this paper would do a great deal to elevate anthropology, said he thought that, if Dr. Tylor had included in his diagrams one illustrating the primitive state of society in which women were the common wives of the clan or tribe, it would explain everything. This state of things still exists in some parts of Tibet, and traces of it are detected in Ancient Egypt and among the primitive Semites. Women were at first considered like other properties, and in the communist stage they used to belong to each and all; when property was divided women were assimilated to landed properties or estates, and the children took the name of their mother, as in feudal countries they took that of their estate. This is really the origin of the so-called matriarchate, in which the mother had, in fact, no power, but gave her name to her child. It is only with progress and civilisation that the position of women was raised till it tends in our modern times to place them on equal footing with men.

SIR G. CAMPBELL agreed with a preceding speaker that the maternal system does not mean the rule of the female, but only that she is used as the family seed-bed. And he would very much like to obtain information on one point in the history of marriage, viz., who invented or how came about the very peculiar system of monogamy, so prevalent among all Aryan races, and under which a man is not only confined to one wife, but tied to her by indissoluble bonds. The maternal system we understand, under which the women of a family are the brood mares of their own family; the patriarchal system we understand, under which a man rules over his wives, slave girls, and children, and exchanges the former for others when he thinks fit. But the sacramental monogamous marriage, by which a man is tied to one wife for ever, (among the Hindoos the wife is tied to him even beyond the grave), that is very peculiar, and he had never seen it accounted for.

Mr. BOUVERIE-PUSEY remarked that Dr. Tylor's views on the origin of exogamy derived confirmation from an old Hungarian law, according to which the Ishmaelites (Tartars converted from Islam) were commanded to give all their daughters in marriage to Hungarians, and to take none but Hungarian wives for their sons, obviously to prevent their continuing to form a separate nationality.

Dr. TYLOR congratulated himself on having been able to place the present method before investigators whose criticism was of such

importance, from their thorough appreciation of the points in which such a method has inherent weakness. With the details as yet in an imperfect state, he found it difficult to bring out the results except as a temporary step, which is, however, on the road to permanent settlement. The difficulty raised by Mr. Galton that some of the concurrences might result from transmission from a common source, so that a single character might be counted several times from its mere duplicates, is a difficulty ever present in such investigations, as for instance in the Malay region, where groups of islands have enough differentiation in their marriage systems to justify their being classed separately, though traces of common origin are at the same time conspicuous. The only way of meeting this objection is to make separate classification depend on well marked differences, and to do this all over the world. With regard to Professor Flower's caution as to the units of comparison, an answer of somewhat the same kind might be given. When a community or group of communities follows a law of marriage and descent substantially similar, this may be taken as a unit, notwithstanding historical connection and the consequent partial correspondence which may exist between it and other unit systems. If this method be fairly and equably worked over the world, the correspondences brought about by historical connexion tend to set off against one another, leaving the results of general human action more or less clear.

Dr. Tylor added that he had collected much material bearing on the great problem raised by Sir George Campbell, but at present without any result sufficiently definite to be brought forward.

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NOVEMBER 27TH, 1888.

FRANCIS GALTON, Esq., F.R.S., *President, in the Chair.*

The minutes of the last meeting were read and signed.

The following elections were announced:—Rev. LORIMER A. FISON, of Flemington, Melbourne, Australia, as an honorary member; Mrs. C. A. FRASER, of 10, Craven Hill, Hyde Park; HENRY BALFOUR, Esq., B.A., of the Anthropological Department of the University Museum, Oxford; and H. HAVELOCK ELLIS, Esq., of Earlsbrook Road, Redhill, as ordinary members.

The following presents were announced and thanks voted to the respective donors:—

FOR THE LIBRARY.

- From A. W. FRANKS, Esq., C.B., F.R.S.—Statement of Progress and Acquisitions made in the Department of British and Mediæval Antiquities and Ethnography in the year 1887.
- From EDWARD B. TYLOR, Esq., D.C.L., F.R.S.—Donations to the University Museum, Oxford, during the year 1887.
- From C. H. E. CARMICHAEL, Esq., M.A.—Report of the Royal Society of Literature. 1888.
- From EDGAR THURSTON, Esq.—Administration Report of the Government Central Museum (Madras) for the year 1887–88.
- From the AUTHOR.—*Orbita e obliquità dell'occhio Mongolico.* Nota di E. Regalia.
- *Crani della Papuasìa.* Studio di G. Sergi e L. Moschen.
- From the U. S. GEOLOGICAL SURVEY.—Geology and Mining Industry of Leadville, Colorado, with Atlas. By Samuel Franklin Emmons.
- From the KAISERLICHE AKADEMIE DER WISSENSCHAFTEN, WIEN.—Sitzungsberichte philos.-histor. Classe, Band cxiv, Heft 2; Band cxv; Sitzungsberichte math.-naturw. Classe, I Abthlg., 1887, No. 1–10; II Abthlg., 1887, No. 3–10; III Abthlg., 1887, No. 1–10; Almanach, 1887.
- From the ACADEMY.—Boletín de la Academia Nacional de Ciencias en Córdoba. Tomo xi. Entrega 1ª.
- From the ASSOCIATION.—Proceedings of the Geologists' Association. Vol. x. No. 8. August, 1888.
- From the INSTITUTE.—Proceedings of the Canadian Institute. Vol. vi. Fas. 1. [No. 50].
- From the INSTITUTION.—Journal of the Royal United Service Institution. No. 145.
- From the SOCIETY.—Journal of the Society of Arts. Nos. 1878, 1879.
- Transactions of the Royal Society of Literature. Vol. xiii. Part 2.
- Transactions and Proceedings of the Royal Society of Victoria. Vol. xxiv. Parts 1, 2.
- Proceedings of the Philosophical Society of Glasgow. Vol. xix. 1887–88.
- Transactions of the South African Philosophical Society. Vol. v. Part 1.
- Boletim da Sociedade de Geographia de Lisboa. viiª Serie. Nos. 9, 10.
- From the EDITOR.—Nature. Nos. 994, 995.
- Photographic Times. Nos. 373, 374.
- American Journal of Psychology. Vol. i. No. 4.
- Science. Nos. 300–302.
- Revue d'Anthropologie. Tome iii. No. 6.
- Revue Scientifique. Tome xlii. Nos. 20, 21.
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Dr. E. B. TYLOR exhibited a collection of objects illustrating Mr. Howarth's paper (page 275), including the scourge and flagellum figured in Plate XII. The objects were obtained by Mr. Howarth in the Azores, and are now exhibited in the Anthropological Department of the Museum of the University of Oxford.

Dr. MARTINDALE WARD exhibited the flagellum and cingulum obtained by him at Santiago in Chili, and figured in Plate XIII.

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#### EXHIBITION of an ANCIENT PERUVIAN GOLD BREASTPLATE.

By F. GALTON, Esq., F.R.S., President.

THE PRESIDENT exhibited a gold breastplate,  $9\frac{1}{4}$  by 13 inches in extreme measurement, rudely embossed, that had been found attached to the body of a Peruvian whose tomb was accidentally discovered in 1824, on removing some mounds of earth in the valley of Camaná, on the sea coast of Peru, lat.  $16^{\circ} 8' S$ . Alongside this body were found many others but not equally adorned, each under a different mound. This specimen, which belonged to him, was brought home by a relative of his, Captain, afterwards Admiral, Malin, then in command of the Pacific Station. The interest of the specimen lay in the fact that the use to which it had been applied had been observed and described. There were two similar plates of gold in the British Museum, but he had there been informed by Mr. Franks that their use was previously unknown, and that the information accompanying the present specimen was very acceptable. The buried Peruvian ornaments that were made of gold were at one time very easy to be procured, but now, owing to the long established practice of rifling the graves and of melting all the gold found in them, specimens of any kind were seldom met with, and one of the large size of that now exhibited was exceedingly rare.

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#### EXHIBITION of ETHNOLOGICAL OBJECTS from SOUTH AMERICA.

By F. W. RUDLER, F.G.S.

MR. RUDLER exhibited a collection of objects of ethnological interest from the head waters of the Amazons and from the interior of British Guiana. The former included (1) a long girdle, or necklace made of the brilliant elytra of *Chrysophora chrysochlora*, associated with a few iridescent wing-cases of *Buprestis gigas*, each case being perforated and strung on cotton

thread; (2) an apron made chiefly of the breast-feathers of the toucan, ornamented with rows of monkey teeth and with the elytra of the large and small beetles used in the girdle; and (3) a crown, or tiara, of toucan feathers, green wing-cases of beetles, and tufts of coarse black hair, apparently human, the whole mounted, like the apron, on curana thread. These brilliant objects were obtained from the Jivaros, and had been submitted to Mr. W. H. Bates, F.R.S., who pointed out the limited geographical distribution of the *Chrysophora*, as defining the district in which they were produced.

The objects from British Guiana, which had been examined by Mr. C. Barrington Brown, F.G.S., who formerly conducted the geological survey of that colony, included (1) a *Pegall*, or native basket, of iturite fibre; (2) a *Queyou*, or native apron, of bead work, by the Ackawoise Indians; (3) a bundle of charms, consisting of long girdles of beads, carrying the claw and tooth of the jaguar, a piece of rock crystal, and various other amulets; (4) a rattle necklace, used in dancing; and (5) an armlet of carved palm seeds.

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The following paper was read by the author:—

*THE SURVIVAL OF CORPORAL PENANCE.*

By OSBERT H. HOWARTH, Esq.

[WITH PLATES XII AND XIII.]

SELF-inflicted chastisement by way of expiation or penance expresses a human sentiment which seems to have accompanied forms of worship in almost all ages. Whether the intelligence of those early branches of our race of whose social and religious system we have no record, devised any such method of temporal retribution for themselves can hardly be guessed; but there is sufficient evidence that though varying much in form, observances of the kind have never been limited to Christian periods or peoples. On the contrary, I am inclined to believe that in most cases the details of such practices have been imported into Christian use from exterior barbarism rather than deliberately invented within the bounds of any Christian persuasion.

My enquiry into this subject has arisen out of the peculiar forms of discipline or scourge which I have recently found to be still employed in connection with a public Lenten function surviving in a remote village of the Azores. The special interest attaching to this observance lies first in the fact that it

presents every appearance of an unbroken tradition from mediæval times: and secondly in the exceptional type of the flagellum, which, so far as I have been able to ascertain, is, at the present period, absolutely unique. I am not aware that the Order of the Flagellantes or Terceiros (Third Order) still exists at any other locality in the Roman Catholic world, maintaining the ancient practice of self-torture with the unmitigated severity observed in this instance, and as a public ceremony.

The first recorded institution of a recognised Order of Flagellantes is referred to the year 1260, when it is said to have originated in the suggestion and example of the Hermit Rainier of Perugia. There is no doubt that it was practised more or less in private by the Abbots Guyon of Pomposa, and Poppone of Stavela, as early as 1040 and 1048, and probably by many of their successors; but it does not appear that they enjoined it as a general or popular practice. When so instituted in Italy it secured (as in every subsequent instance) a following of fanatical adherents, together with the enthusiastic veneration and encouragement of a section of the Catholic populace. The instruments then employed are described as "knotted cords stuck with points and pins"; and the band of men devoted to this penitential discipline seems to have constituted a sort of lay order of the priesthood, being entirely distinct from the *penitens noirs, gris, &c.*, of the monastic body. They met, however, with no formal recognition by the Church at any date. Their practice, on the contrary, was pronounced a heresy: and on becoming prominent, was suppressed by the authority of the priests themselves.

In 1349 it reappeared with fresh vigour; spreading rapidly into France and Germany, and developing details of barbarity and encroachments on decency which brought upon it the authoritative veto of Clement VI. Disappearing once more from public view for a time, it revived yet again in 1398, its promoters claiming for it a sanction in the form of an express command from Heaven that a public procession of flagellants should be held. Again it became rampant in many parts of the continent, was again suppressed by direct order of Boniface IX, and ultimately was condemned by the Council of Constance in 1414. After this date the practice appears to have veiled itself in secrecy, though evidently never extinguished; as in 1601 we find a protest raised against it by the Chancellor of the University, of Paris; and not long afterwards the rigorous use of the scourge prohibited by an Act of the French Parliament. But so far as any record exists, it was in those early days of the 15th century that the unanimous verdict of civilised authority stamped it out as a Christian observance. At the same period commences

the chequered history of the West Atlantic Islands and their colonisation. Within a comparatively short space of time the Canary Group was occupied and its Guanche inhabitants subdued by the Spaniard, and the Portuguese explorers planted their first settlements on the Madeiras and the Azores. The actual discovery of the latter islands was probably made a hundred years earlier; and though the facts are shrouded in uncertainty, it is possible that a quasi-colonisation had been attempted locally by the expedition of Angiolino del Tegghio in 1341. The limit of our historical knowledge of the islands must, therefore, be fixed at from four to five centuries; being thus contemporaneous with the suppression of the flagellants in Europe.

Although the Azores are, in fact, the nearest of the three groups to our own shores—their distance being some fifty miles less than that of the Madeira Group—the accident of their westerly position almost in mid-ocean, together with their somewhat less genial climate, has caused them to remain singularly unfamiliar to Europeans generally. It may not be out of place, therefore, to mention briefly a few of their leading characteristics. The Azorean Archipelago lies 530 miles north-west of the Madeiras, and about 700 west of Lisbon. There are nine islands in the group, separated by distances varying from 5 to 120 miles, and spread over an area nearly 400 miles in length. All are inhabited; the total population being considerably over a quarter of a million, and the capitals of St. Michael's, Terceira, and Fayal being towns of 20,000 to 25,000 inhabitants. St. Michael's, from the summits of which only one of the other islands is within sight, is about 45 miles in length, and from 7 to 15 in breadth; its area being almost exactly equal to that of the county of Middlesex. The formation is entirely volcanic, and the island comprises three great eruptive vents which have become linked together by lesser intermediate outbursts. The present remnants of volcanic activity are permanent within living memory, and comparatively feeble. The mountain ridges encircling the great craters rise from 2,000 to 3,500 feet above the sea level. The outer slopes of these, consisting almost entirely of tuffs, pumice, and the lighter scoriaceous products, descend to the sea in ribs, or "lombas," intersected with deep ravines. To this peculiar formation is due the growth of what are called the "lomba villages," which in the mountainous districts occupy the crest of each ridge. These comparatively isolated communities are supported each by the cultivation on its own "lomba"; and are thus self-contained, and, to a great extent, independent of each other. In one day's walk of about 27 miles along the north-east coast, I traversed no less than twenty-two ravines, from 200 to 500 feet in depth; most of the intervening

ridges being crowned with "lomba-villages." The lomba terminates, in almost every instance, with an abrupt sea cliff.

The village of Fenaês d'Ajuda, where alone the Order of the Terceiros still maintains its barbarous practice, is situated upon the skirts of a mountain rib on the north coast; and being, like several of its neighbours, somewhat difficult of access, has remained entirely secluded from foreign visitors, as well as from the direct supervision of the civil and ecclesiastical authorities. The people are entirely Portuguese, and excepting for some traces of the Spanish occupation in the early part of the last century, present less evidence than usual of the heterogeneous composition of their race.

The Church of Nossa Senhora d'Ajuda, in connection with which the order is maintained, is not that of the parish; but is, in fact, the chapel attached to the ancient Convento dos Frades (Convent of the Friars) standing in a solitary position on a promontory about a quarter of a mile from the village.

Accurate information regarding a matter naturally treated by the people with some reserve is not easily obtained; but so far as it was communicated to me by the priests, who professed themselves opposed to the practice, I found it to be corroborated from other sources. In some instances the protest of the village priests against the barbarity of the custom, and their declaration that they were powerless to suppress it, were unquestionably genuine.

The sum of the statements made to me is that the Order of the Terceiros in that place now consists of a body of from fifteen to eighteen lay inhabitants of the parish, who are admitted to it by election every seven years; the Order being held in such reverence, and the efficacy of the penance so profoundly believed in, that vacancies are much sought after. The ceremony takes place annually in connection with the procession of N.S. dos Passos on the third Sunday in the Cuaresma (Lent). The costume of the flagellants is a white linen tunic with a large oval opening in the back for the purpose of flagellation; and the head of the performer is entirely concealed with a wrapper of white linen, so that his identity may be unknown to the general spectators. Mass is conducted by the priest in the Convent Church, and the flagellation commences when the church is darkened in the course of the Lenten ritual; the Order kneeling in two rows at each side of the Chancel. It is continued throughout the procession which follows. The principal streets of the village are traversed, and the self-punishment is inflicted with special violence during pauses at the street corners, when the members of the band seem to vie with one another in the severity of their discipline. The procession

returns to the church ; the flagellants resuming their former position, and continuing to scourge themselves with increasing vigour until the conclusion of the ceremony. The torture is carried to such extremities that on the occasion of my visit to the church a few weeks after the observance in April last I found the side walls, railings, and confessionals in the chancel smeared and spotted with blood to a height of four or five feet. From the peculiar points of creed associated with the penance, which I elicited later, I have no doubt that deaths result not unfrequently.

The implements used are two in number. The "*Azorrague*" (Plate XII, fig. 1), or scourge is of the more familiar type of such devices ; consisting of a short wooden handle carrying a bunch of cords about nine inches long, confined by a collar, and terminating in twelve thongs (representing the apostolic group) formed of leather strips twisted and stiffened into a spiral form. The specimen obtained I imagine to be of considerable age, and probably of continental manufacture. The flagellum, which is brought into use after the *Azorrague* has done its worst, is a solid ball of beeswax suspended by a looped string, and studded with lancet-shaped splinters of glass, about half-an-inch long (Plate XII, fig. 2). Whatever may be the origin of the design of this cruel instrument, it is of island make, as this constitutes one point of its special virtue.

In the *Esperança* Convent of *Ponta Delgada*, the capital of *St. Michael's*, is preserved the image called the *Santo Christo*, a wooden figure loaded with jewellery, and regarded by the entire population of the islands with the highest possible reverence and awe. The candles burnt upon the altar of the *Santo Christo* are of refined white beeswax ; and the remains of these when partially burnt down, are preserved as relics, and presented in that capacity to any one making an offering to the image. The course of my enquiries led me to the fact that these same candle-ends had also been employed for the manufacture of the flagella, which are by these means invested with a special sanctity. Thus the implement of mediæval heresy was being produced in the very centre of the seat of government, where the authorities were totally unaware of its existence.

As already remarked, I have not been able to learn that any instrument of this extreme severity is extant for a similar purpose in any part of the world. I have examined another type of flagellum represented by two examples nearly similar in form ; one which was obtained in Mexico, being in the British Museum ; and the other, from *Santiago (Chili)*, in the collection of *Dr. Martindale Ward* of *Twickenham* (Plate XIII, fig. 1). These are of linked wire, of the character of chain mail, and

are furnished with projecting spikes for the purpose of scratching or tearing. They are accompanied with a cingulum, or belt, of the same make and material (Plate XIII, fig. 2).

These circumstances taken together seem to me to afford conclusive evidence that the *Disciplinas* of Fenaês d'Ajuda cannot be regarded as a revival. The type of the flagellum is quite unlikely to have been the conception of any modern votary of the order; and, like the order itself, must be regarded as having been perpetuated at this spot without interruption since the first colonisation of the country in the earlier part of the fifteenth century. Surviving in this form as a public ceremonial, it is, perhaps the only link in the history of such practices which has transmitted to present times the model of an instrument perhaps contemporary with the birth of the order itself. To what earlier date it may belong, apart from its penitential use, it would perhaps be fruitless to enquire; unless any record with which I am not acquainted has preserved any form which can be identified with it. Several of the points of belief connected with the custom I found to be wholly inconsistent with the teaching of the Roman Catholic Church at the present day; thus further indicating the lengthened period during which this community has remained out of touch with the central religious authority.

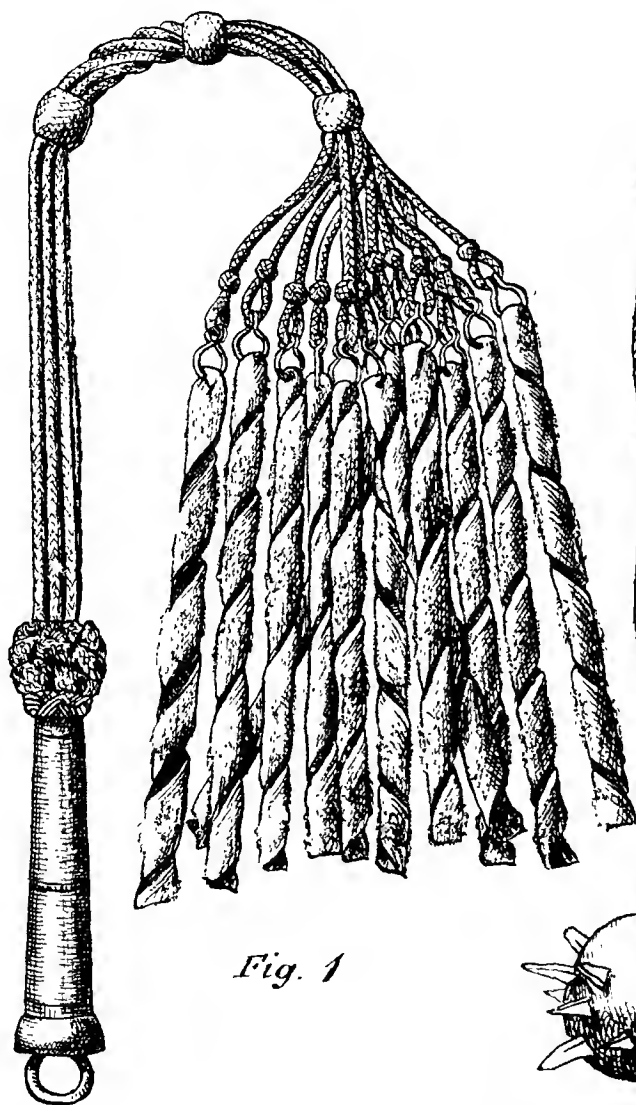
In concluding these remarks it is fair to repeat what has already been stated in a published notice of the practice, viz.: that since its continued existence has been brought to the attention of the provincial government of the Azores, steps have been taken to ensure its suppression before the recurrence of the anniversary next year.

### *Descriptions of Plates XII and XIII.*

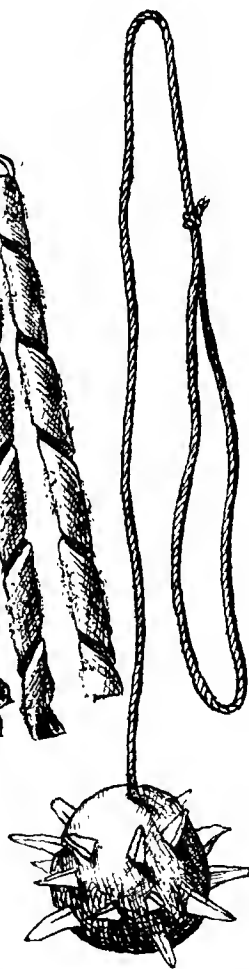
#### *Plate XII.*

- Fig. 1. Azorrague or scourge, consisting of wood handle, strand of plaited cords, and twelve thongs of twisted undressed hide, probably goat skin, attached by brass links (Convento dos Frades, Fenaês, d'Ajuda, St. Michael's, Azores).
- Fig. 2. Flagellum, formed of a ball of beeswax from candles used on the altar of the Santo Christo, Esperança Convent, Ponta Delgada, St. Michael's, and set with lancet-shaped splinters of glass, and suspended by a short cord (Convento dos Frades, Fenaês d'Ajuda, St. Michael's, Azores).

The objects in this Plate are now in the Anthropological Department of the Pitt Rivers Museum of the University of Oxford.



*Fig. 1*



*Fig. 2.*

*Alf. Robinson, del.*



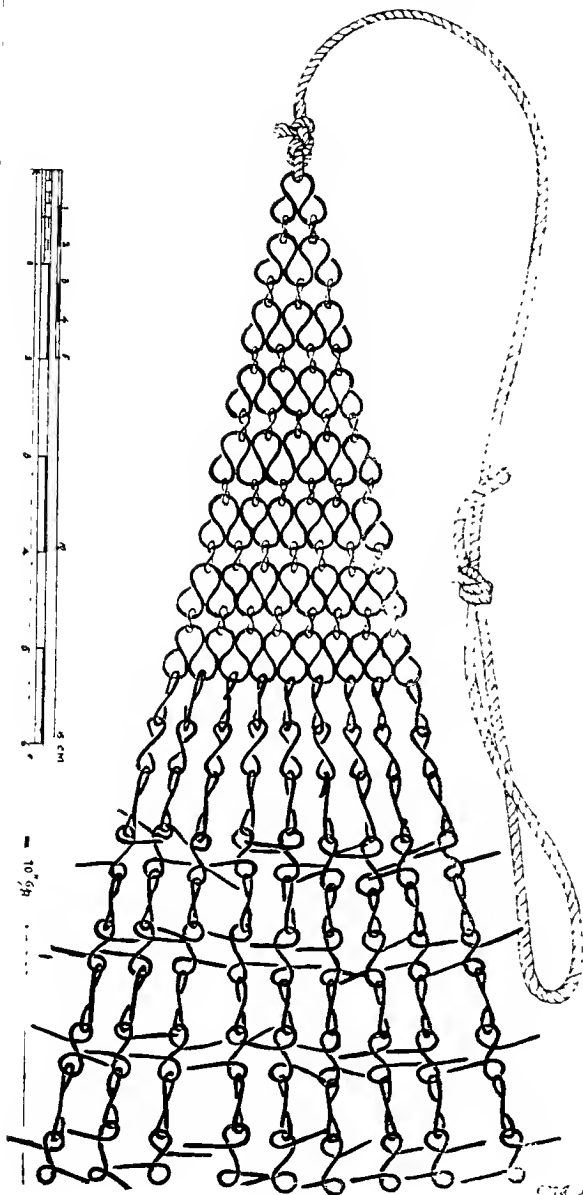


Fig. 1.

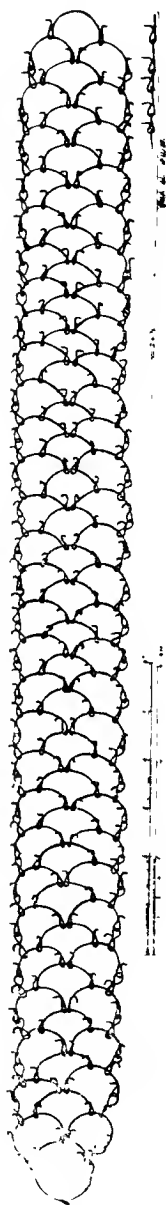


Fig. 2.



*Plate XIII.*

- Fig. 1. Wire flagellum with spiked links, suspended by a cord. Purchased in the streets of Santiago (Chili). One-half natural size.
- Fig. 2. Wire cingulum or belt, worn for penitential discipline; spiked links on the inner surface. Purchased in the streets, Santiago (Chili). One-fourth natural size.

The objects figured in this Plate are in the collection of Dr. Martindale Ward, and were obligingly sketched by G. M. Atkinson, Esq.

DISCUSSION.

Dr. SUMMERHAYES said with regard to the very mixed Portuguese inhabitants in the Azores, that he had no doubt but that there was a considerable admixture of Norse blood, introduced either directly from Scandinavia or secondarily (as was more probably) from Normandy.

Leaving the Guanche or Berber element out of the reckoning, this would account for the large number of fair-haired and blue-eyed people to be found both in the Azores and the Canaries.

There was quite a large emigration from these islands into Venezuela and North Brazil, and these immigrants (called "Isleños" by the Venezuelans) were to a man distinctly Scandinavian or Norman—rather than German—in their physical characters. He begged to protest against the too common practice of dubbing all the fair-skinned stocks of mankind in Europe or elsewhere as German, or Teutonic, instead of Gothic or Scandinavian. There was great need of a revised nomenclature as applied to races and languages which were rarely homologous.

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The following paper was read by the Secretary :—

MARRIAGE CUSTOMS of the NEW BRITAIN GROUP.

By the Rev. BENJAMIN DANKS.

1. FOR marriage purposes the people of New Britain are divided into two classes or divisions. The names of these divisions on the Duke of York Island and New Ireland are *Maramara* and *Pikalaba*. On New Britain proper the two classes are named after two mythological personages, one named *To Kabinana*, the other *To Kovuvuru*. The first of these two is considered as the founder, creator, or inventor of all good and useful things. Fruitful land, well-built houses, fine fish traps, were all the

work or inventions of *To Kabinana*; also all good institutions, customs, and usages are supposed to have been derived from him. Hence the word *kabinana* in the New Britain language means *wise*, and in *kabinanapa ia* we have an active transitive verb, which means to do a thing wisely or well. The *To* written before *Kabinana* simply denotes the masculine gender and may in English be strictly rendered as "Mr." In this name we may have wisdom personified. All savages like and respect, and view with no little reverence, a wise man. In New Britain to call a man *To Kabinana* when he is working at anything is simply to pay him a very high compliment.

*To Kovuvuru* is considered by far the lesser person of the two. He is credited with having created all the bad barren land, all the high hills, and everything which is clumsy or ill formed. To call a man *To Kovuvuru* when he is doing anything is simply to make him ashamed. Yet I have never found that the class which bears the name of *To Kovuvuru* is considered to occupy, socially, an inferior position to the *To Kabinana* class.

On the Duke of York group the names given to these two personages are *To Kabinana* and *To Pulgo*.

2. The *totems* of these classes on Duke of York are two insects. That of the *Maramara* is the "*Ko gila le*," i.e., the leaf of the horse-chestnut tree, so named because being about the length and size, and resembling very much in other respects the leaf of that tree. It is a beautiful insect, and when resting on a leaf of the tree, from which it takes its name, it is difficult to distinguish it from the leaf. The *Pikalaba's* totem is the "*Kam*," which is doubtless the *Mantis religiosus*.

The *Maramara* class will on no account injure, or allow to be injured with impunity, their totem, the "*Ko gila le*," but they have not the slightest compunction in abusing the *Kam*. The *Pikalaba* class reverence the *Kam*, but do not hesitate to destroy the *Ko gila le*, if they can do it secretly. Both these classes believe that their ancestors descended each from their own particular totem, which they designate as *Takun miat*, i.e., our relative. Any evil or abuse inflicted by one class on the other's totem is considered as a *casus belli*, and is an insult which the class is bound to avenge.

No man may marry a woman of his own class. To do so would bring instant destruction upon the woman, and if not immediate death to the man, his life would never be secure. The nearest relative (male) of the woman would immediately seek her and kill her the moment he found her. I have been told by natives that both man and woman would be killed as early as possible. The relatives of the woman would be so ashamed

that only her death could satisfy them. The man might possibly escape, but I think not. But it is scarcely any use speculating as to what would be done to the man, because such a case never occurs in a thickly populated district. If a man should be accused of adultery or fornication with a woman, he would at once be acquitted by the public voice if he could say, "She is one of us," *i.e.*, she belongs to my totem, which in itself precludes the possibility of any sexual intercourse between us. The shame of such intercourse is as great with them as is the shame and disgrace of sexual intercourse between brother and sister in a Christian community.

But while such is the case, the evil consequences of inter-family connections are not averted altogether, and but for an inner regulation which exists, but which is not absolutely binding, those evil consequences would be accelerated. Two brothers are both of the same totem, say *Pikalaba*. They each marry a *Maramara* woman. Their children are of the mother's totem, taking their descent from their mother. Now it is possible for one brother to take the other brother's daughter to wife, and no exception may be taken to it because the girl does not belong to his totem, but to her mother's. A man may not take to wife his sister's daughter, because she is of his totem. So upon theoretical grounds a man may without law-breaking marry his niece. But there is a great repugnance to such unions among the natives of New Britain, and in one case where such an union was brought about, the natives with whom I conversed upon the subject utterly condemned it. This public feeling against such marriages is that inner regulation mentioned above.

3. Preparations for marriage are various. On Duke of York initiation into the secret society which is called *Dukduk* seems a sufficient preparation (though not absolutely necessary to marriage) for the boys, and I do not know of any needful preparation for the girls. I am persuaded that a man could marry on Duke of York Island even though he were not initiated, but then association with men in their secret places, customs and practices would be jealously denied him. Hence little boys not more than four or five years old have to my knowledge been initiated, the initiation expenses being borne by the father or uncle. The shell money thus paid by the friends goes to pay those who have taken part in the ceremony, and not a little of it going into the hands of the leaders of the society. I think it is more a matter of custom which none like to evade because bringing with it certain social advantages, than an absolute necessity which renders initiation into this society desirable.

In New Britain there is, so far as I am aware, no special preparation on the part of the girls for the marriage state.

On New Ireland there is a custom in connection with the young women which may be regarded as a preparation for marriage. Some girls wear a fringe across their shoulders until they are marriageable. These are the poorer class. Others are put into a cage. For nearly ten years I have known of this custom, but it has never been my good fortune to see the cage or the ceremony, though I have often endeavoured to do so. The Rev. G. Brown, F.R.G.S., saw one and published an account of it in the April number of the Australasian Wesleyan Methodist Missionary Society's "Missionary Notice," in 1878, from which I take the following:—"I heard from a teacher about some strange custom connected with some of the young girls here, so I asked the chief to take me to the house where they were. The house was about twenty-five feet in length, and stood in a reed and bamboo enclosure, across the entrance to which a bundle of dried grass was suspended to show that it was strictly "*tabu*." Inside the house were three conical structures about seven or eight feet in height, and about ten or twelve feet in circumference at the bottom, and for about four feet from the ground, at which point they tapered off to a point at the top. These cages were made of the broad leaves of the pandanus tree, sewn quite close together so that no light, and little or no air could enter. On one side of each is an opening which is closed by a double door of plaited cocoanut tree and pandanus tree leaves. About three feet from the ground there is a stage of bamboos which forms the floor. In each of these cages we were told there was a young woman confined, each of whom had to remain for at least four or five years, without ever being allowed to go outside the house. I could scarcely credit the story when I heard it; the whole thing seemed too horrible to be true. I spoke to the chief and told him that I wished to see the inside of the cages, and also to see the girls that I might make them a present of a few beads. He told me that it was "*tabu*," forbidden for any men but their own relations to look at them; but I supposed the promised beads acted as an inducement, and so he sent away for some old lady who had charge, and who alone is allowed to open the doors. While we were waiting we could hear the girls talking to the chief in a querulous way as if objecting to something or expressing their fears. The old woman came at length and certainly she did not seem a very pleasant jailor or guardian; nor did she seem to favour the request of the chief to allow us to see the girls, as she regarded us with anything but pleasant looks. However, she had to undo the door when the chief told her to do so, and then the girls peeped out at us, and, when told to do so, they held out their hands for the beads. I, however, purposely sat some distance away and

merely held out the beads to them, as I wished to draw them quite outside that I might inspect the inside of the cages. This desire of mine gave rise to another difficulty, as these girls were not allowed to put their feet to the ground all the time they were confined in these places. However, they wished to get the beads, and so the old lady had to go outside and collect a lot of pieces of wood and bamboo, which she placed on the ground, and then going to one of the girls, she helped her down and held her hand as she stepped from one piece of wood to another until she came near enough to get the beads I held out to her. I then went to inspect the inside of the cage out of which she had come, but could scarcely put my head inside of it, the atmosphere was so hot and stifling. It was clean and contained nothing but a few short lengths of bamboo for holding water. There was only room for the girl to sit or to lie down in a crouched position on the bamboo platform, and when the doors are shut it must be nearly or quite dark inside. They are never allowed to come out except once a day to bathe in a dish or wooden bowl placed close to each cage. They say that they perspire profusely. They are placed in these stifling cages when quite young, and must remain there until they are young women, when they are taken out and have each a great marriage feast provided for them. One of them was about fourteen or fifteen years old, and the chief told us that she had been there for five years, but would soon be taken out now. The other two were about eight and ten years old, and they have to stay there for several years longer. I asked if they never died, but they said 'No.' If they are ill they must still remain. Some other girls we saw outside wore fringes crossed over the breasts and back. As well as we could learn they must wear these as soon as they attain a certain age or stage of growth, and continue doing so until marriageable. The latter custom seems to be followed by those whose parents cannot afford or are unwilling to bear the expense of the feasts which the other barbarous custom entails. Our people tell me that the same custom, in a modified form, prevails also on the western side of New Ireland. There, however, they only build temporary huts of cocoa-nut leaves in the bush in which the girls remain."

An account of the caging ceremony was given by the Rev. J. Rooney, in a letter written to our General Secretary for Foreign Missions, and which was published in our connexional papers. The Rev. gentleman writes:—"I was just in time to witness the ceremony of caging one of the girls. The poor little thing, loaded with necklaces and belts of red, white, and blue beads, looked very frightened. On the morrow she was to be tattooed in the New Ireland fashion, *i.e.*, have all kinds of

patterns carved on her body. One part of the ceremony was a fight between the females of the *Maramara* and *Pikalaba* clans, seemingly for the possession or custody of the captive. After pelting each other vigorously with anything that came to hand, a rush was made by the victorious amazons, for the house where the girl was caged. A general scrimmage ensued at the narrow entrance to the house. The crush was fearful, but no bones were broken. The ladies did not show to advantage in the 'melee.'

It may be as well to remark here that in a note to me upon this subject the Rev. Lorimer Fison, M.A., concerning this caging ceremony, says:—"The first who went to New Britain as missionaries, recognised in this the Fijian custom of "*Tabu siya*," and mentioned it in their letters to me. I never saw it in Fiji, and believe that the confinement was not so severe, but there can be no doubt that it was the same thing."

It is to be regretted that the Rev. J. Rooney did not take some pains to inquire more fully into this ceremony. There must be some most interesting incidents connected with such a custom as this. Perhaps, however, we can form a fairly accurate conception of the ceremony by considering an analogous custom in connection with the preparation of young men for marriage on the Island of New Britain.

4. A number of young men have arrived at the age of say from fifteen to sixteen years, or even two years younger. A great feast is prepared, and all the relatives of the young men or boys are there. At a certain stage of the feast a rush is made by the men towards the boys. The latter are quickly seized from behind and their arms pinioned, lest they should break loose and attempt to spear their captors. While they are held a chief or a relative of each lad advances toward him with some shell-money, which is tied together in a coil, and throws it over the lad's head on to his shoulders. This, so far as I am able to understand the matter, is simply to appease the anger of the young fellow, who is supposed to be very angry indeed at being forced into matrimony, or fitness for matrimony. Yet if he can break away before the money is thrown over his head, he may escape for the time being. They very rarely do break away in point of fact, but some Christian young men once did so, and laughingly told me how they escaped by hiding under my house until the ceremony was concluded. But a young man having escaped the public ceremony may yet be entrapped in a private way. His parents are ashamed of his bachelorship or strongly desire to see him married. They may arrange with some of his friends or companions to decoy him to some given place, where they will meet him. He suspects

nothing, until he is suddenly seized from behind, and held firmly, while his friends throw the shell-money over his head, and the ceremony is completed. But while he is in the power of the others he will vociferate, as only a savage can, "What have I done that I should be compelled to marry? Have I ever got you into trouble by immoral conduct? Let me go." If he could break away it would be etiquette for him to attempt the lives of those who are forcing him into fitness for marriage.

5. The ceremony over, the young man must go into the bush and hide away from all his female relatives for a period varying from three to six months. But under the pressure of any sudden emergency, such as war, he may return almost at once. Usually, however, he remains. It appears that he may meet any female of the town or village without disgrace, except a female relative. Houses are erected in the bush for the young men to occupy with any of their friends whom they may persuade to accompany them. The houses thus built are but poor affairs, only built of plaited cocoa-nut tree leaves. I may be permitted here to point out that this custom is the same as that mentioned above by the Rev. G. Brown, F.R.G.S., only there the women have to hide instead of the men. This custom is called *Puruparau*, which is the reduplicated noun form of *Parau* = to hide. Under cover of the darkness of night he may come down to the beach, but must not be seen by a female relative. Often a young man who has been in hiding has come to my back door at night, and in a whisper has begged for some tobacco. Just to test the custom, I have called out the name of some female relative. He has begged me to desist, and, upon continuing to call, he has forgotten his desire for tobacco in his desire to get out of sight. A circumstance such as this is at once a test and a proof of the custom, and at the same time is somewhat amusing.

6. Should a young man who is in hiding happen to meet a female relative in the bush, he does not run away from her, but keeps on his way until they meet, when he will step aside from the road, and hold out to her anything he may have in his possession. She takes it without a word, and they part. It now becomes the duty of the young man's friends to redeem for him that which he may have given to her. This seems to be a sort of compensation to her for the shame of having met him. So far as I can gather he is responsible for that shame, and so must pay. Until this pledge, or whatever it may be called, is redeemed, he is considered to be in disgrace, and is much ashamed.

7. While hiding from females a great liberty seems to be accorded to him and his companions, viz., that of visiting

patterus carved on her body. One part of the ceremony was a fight between the females of the *Maramara* and *Pikalaba* clans, seemingly for the possession or custody of the captive. After pelting each other vigorously with anything that came to hand, a rush was made by the victorious amazons, for the house where the girl was caged. A general scrimmage ensued at the narrow entrance to the house. The crush was fearful, but no bones were broken. The ladies did not show to advantage in the 'melee.'

It may be as well to remark here that in a note to me upon this subject the Rev. Lorimer Fison, M.A., concerning this caging ceremony, says :—"The first who went to New Britain as missionaries, recognised in this the Fijian custom of "*Tabu siga*," and mentioned it in their letters to me. I never saw it in Fiji, and believe that the confinement was not so severe, but there can be no doubt that it was the same thing."

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4. A number of young men have arrived at the age of say from fifteen to sixteen years, or even two years younger. A great feast is prepared, and all the relatives of the young men or boys are there. At a certain stage of the feast a rush is made by the men towards the boys. The latter are quickly seized from behind and their arms pinioned, lest they should break loose and attempt to spear their captors. While they are held a chief or a relative of each lad advances toward him with some shell-money, which is tied together in a coil, and throws it over the lad's head on to his shoulders. This, so far as I am able to understand the matter, is simply to appease the anger of the young fellow, who is supposed to be very angry indeed at being forced into matrimony, or fitness for matrimony. Yet if he can break away before the money is thrown over his head, he may escape for the time being. They very rarely do break away in point of fact, but some Christian young men once did do so, and laughingly told me how they escaped by hiding under my house until the ceremony was concluded. But a young man having escaped the public ceremony may yet be entrapped in a private way. His parents are ashamed of his bachelorship or strongly desire to see him married. They may arrange with some of his friends or companions to decoy him to some given place, where they will meet him. He suspects

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7. While hiding from females a great liberty seems to be accorded to him and his companions, viz., that of visiting

various towns for a considerable distance around, where the young man is shown as "the man about to marry." This custom is called *Buli na varina*. *Varina* means *woman*, but what *Buli* means I have never been able to ascertain. Perhaps some other missionary to New Britain may be able to throw light upon the word by-and-by, and thus give the meaning of the custom through the word. *Na* is simply the preposition *of*.

8. When the young man has been in hiding long enough to satisfy both himself and his friends, two or three houses are erected on the beach. These are decorated in a variety of ways showing much taste. The houses are never used for much except as sitting houses, in which young men congregate, and in which I have never seen a woman. These are allowed to remain as long as they will stand, and even the ruins are allowed to remain for a considerable time after the houses have fallen down. When the houses have been built a feast is prepared by the young man's friends, and the ceremony is completed. The young man who has thus been made marriageable is not of necessity bound to marry. Many do not marry for a considerable time after their *Paraparau* is accomplished. Some I have met who have never married, but the cause lay in their inability to raise the shell-money with which to purchase a wife.

9. Supposing a young man does not desire marriage, but is continually getting into trouble and occasioning loss to his friends by lewd and immoral conduct, his friends may purchase a wife for him and settle him in life. Generally the wife is accepted by the young man, though not always. Such was the case of To Gala, the son of an old chief named Warawaram, who resided on Duke of York.

Sometimes fond old mothers are desirous of keeping their sons with them as long as possible. In order to do so they will purchase a little child five or six years old for her son, and he must wait until she is old enough to be married to him. This is not necessary, *i.e.*, the waiting, for a New Britain man may have as many wives as he can purchase, but in the case of Ya Vika, who purchased a child of about six years of age for her son Petero, he will doubtless wait until the girl has reached eleven or twelve years of age. I have been informed (I cannot vouch for it as having come within the range of my own personal knowledge, but give it as hearsay), that families will make compacts concerning their children before they are born, to the effect that the boys of one family should marry the girls of the other family. Girls are married at a very early age in some cases. I have seen a fine healthy girl of not more than eleven or twelve years of age married to a man of twenty-five or

thirty. The result of such an early union for the girl has been dreadful. To judge of her sufferings by her altered appearance they must have been most acute.

Sometimes considerable care is exercised by the would-be Benedict in the selection of the women who is to be honoured by being permitted to call him her husband. I knew a young man who took a basket containing a certain amount of shell-money to a young woman and gave it to her with a request that she would take care of it for him for a time. After the lapse of a considerable time he went to her for it. Upon measuring the shell-money he found that some of it was missing. He then turned upon the young woman and informed her that he had intended to purchase her for his wife, but he had now lost all confidence in her and he would not. The young woman no doubt felt the loss she had sustained, and had she known the old saw she would have exclaimed "Honesty is the best policy!" I certainly never heard of a similar case. Generally the purchase of a wife is accomplished in the following manner:—

10. Supposing a young man desires to marry. His friends soon learn of his desire and they set to work at once. It may be that he has expressed a desire to make a certain young woman his wife. In that case the friends will try to secure her for him. But failing any indication of a special choice on his part, they proceed to make a selection according to their own tastes and desires. The amount of shell-money which they intend to pay for her is measured out and tied in a coil, and then tied upon a spear or pole, or is carried in the hand, to the place where the girl's family lives. If it is tied to a spear, when they arrive at the place the spear is thrust into the ground, and the party sit down. Before business can be done the betel-nut must be chewed by all present, a large quantity being assigned to the visiting party. They then state their business. With some there is a feeling of honour, and in order to secure with dignity the required prize, a sufficiently tempting price is offered to secure an immediate sanction on the part of the girl's friends. But in the majority of cases which have come under my own observation there has been a haggling over the matter which has not been edifying, the friends of the girl insisting upon a higher price because of her surpassing excellences, the would-be purchaser expostulating because of her personal blemishes or defects.

11. After the price has been decided and paid, the girl may be taken away at once to her husband's home, or she may be allowed to remain with her friends for a considerable time. If she is very young the latter course may be adopted: if she is full grown the former. I have known full grown young women

who have been purchased when young, and who then were unclaimed by their husbands. But claimed or not claimed, great feasts are prepared by the relatives of the girl for the relatives of the young man and *vice versa*. Whenever a young woman has to go to her husband, she is taken to him by her friends. Some very painful sights are seen in this part of their marriage customs. It oftens happens that the young woman has a liking for another and none for the man who has purchased her. She may refuse to go to him. In that case her friends consider themselves disgraced by her conduct. She ought, according to their notions, to fall in with their arrangements with thankfulness and gladness of heart! They drag her along, beat her, kick and abuse her, and it has been my misfortune to see girls dragged past my house, struggling in vain to escape from their fate. Sometimes they have broken loose and then ran for the only place of refuge in all the country, the mission house. I could render them no assistance until they have bounded up the steps of my verandah into our bedroom and hidden themselves under the bed trembling for their lives. It has then been my privilege and duty to stand between the infuriated brother or father, who has followed close upon the poor girl, spear in hand, vowing to put her to death for the disgrace she has brought upon them.

I am well aware that it is etiquette for the women to make some show of resistance, but when it is done as a mere matter of etiquette the friends pretend to be angry, but in their pretensions there is much laughter and fun. But in many cases which came under my notice it was not a matter of form but very painful earnestness.

12. On Duke of York Island there is generally a marriage feast of a superior kind when persons of influence are being married. The women of the town and surrounding district prepare a large number of puddings, and many pigs are killed to the intense satisfaction of the assembled crowd. Shell money is brought out and exhibited, being placed around the food. Presents are brought by the women and given to the bride. Digging-sticks are presented to her, indicating her duty in the plantations. Shells of various kinds, beads, necklaces, and all things necessary for a wife to possess are given. But I am told that this is a mere sham, the things being given in public but received back in private. A cocoanut is broken over the heads of the pair and the milk sprinkled upon them much the same as when persons are baptised. After this come periodical feasts for a considerable time, the friends of the bride feasting the friends of the bridegroom, and *vice versa*. The friends of the bridegroom and bride assist to build the house of the young

couple, and the young men meet upon an appointed day and subscribe each a small sum of shell-money, and the whole is then presented to the bridegroom. This is to help him to pay back the debt he may have incurred in purchasing his wife. I do not think that this custom obtains in New Britain. Sometimes a father or an uncle or friend may undertake to purchase a wife for the young man, but in that case he is considered to be in debt until the advance is repaid. I have heard some very bitter things said by parents to their children because the money thus advanced has not been refunded.

13. After marriage children are not born by the women for a period of from two to four years. I am informed that this is the result of a popular dislike to speedily becoming mothers on the part of the women, who use various means to procure abortion and use them successfully. The favourite method is that of clasping the waist between the thumb and fingers on both sides, pressing and working the fingers strongly into the stomach and so compressing it. Others insert a sharp pointed stick into the womb thereby destroying the foetus. The latter operation I give merely as hearsay, and for what it is worth. But it is a very likely method of procuring abortion. Other savage tribes have the same custom. In a note from the Rev. L. Fison, M.A., he tells me that in Fiji the same thing existed in the former heathen days, only that two sticks were used. Some say that there is an herb which is used for the same purpose. This custom was also in vogue in Fiji. But it is difficult to arrive at the exact truth in these matters, the women being very reticent upon the subject and the men not caring to converse upon it. The fact, however, remains that in no case of heathen marriages have I found that the woman bears children until she has been married for the period above stated.

14. A very significant fact in connection with the above is this:—When a Fijian teacher marries a native Christian woman in New Britain, she will become pregnant and bear a child within the time usually allowed for such an event in our own society. Further, when two Christian natives marry, the result is exactly the same as in the case of the Fijian and his native wife. We are careful to teach both our male and female church members the Christian view of the evil and sin of procuring abortion. The result which follow such teaching proves, that although we have but vague ideas of how abortion is produced, and we have also the fact that some of the women deny such a practice, such a practice does exist and that it is universally observed.

15. A considerable period elapses between the birth of one child and the birth of another. The general term is about three

years. One child is always well out of hand before another appears. I have known two or three exceptions to this.

16. The women are delivered standing with their legs planted wide apart, and the midwife sitting almost beneath to receive the child. The umbilical is tied into a knot and cut. I am not aware that any medicine is used to facilitate parturition. A charm is always hung in the house to secure the child from the entrance and malignity of evil spirits, and to make as easy as possible the pangs of labour. If twins are born, and they are boy and girl, they are put to death because being of the same class and being of opposite sex, they were supposed to have had in the womb a closeness of connection which amounted to a violation of their marital class law.

17. The marrying of a second wife after the death of the first is quite an unpleasant affair for the widower. On the day appointed the female relatives of the dead wife assemble about his grounds. It is a day of liberty and fun with them. They take their husbands' or brothers' weapons, or any article of male attire they can find, and they have the liberty of daubing with red paint any man they can catch. Men are careful to keep out of their way on that occasion. If a woman moves towards a man, he moves off. There is as much rollicking fun amongst them, as there would be amongst the same number of men let loose. They pull each other about, and jostle each other in a manner which, on any other occasion, would cause considerable trouble. But at a given signal they cease all fun and throw themselves with savage glee upon the widower's house, fences, plantations, or property of any kind, and destroy them as far as they possibly can. The owner stands by and sees it all done, but has not the slightest power to interfere. This custom is called the "*Varagut*." The only explanation I have been able to get concerning it, is:—"The women are angry on account of the first wife." The notion seems to be they don't care to see the labour of the first wife go to benefit the second.

18. The fate of a widow, on Duke of York at least, is a cruel one, for she becomes common property. There was an old woman in our town (Kinawanua) whom it was thought advisable to baptise and admit as a member of the Church. Upon consulting, however, with a teacher on the matter, he advised delay, giving the above custom as his reasons for such advice. He stated that it was the custom there for the men thus to claim all widows. I am not sure that this custom obtains all through the group, but have strong reason to believe that it does obtain in the large island of New Britain.

19. Married life in New Britain is a hard one for the women,

as in all savage countries. They are beaten and ill-treated by their husbands as occasion may arise. The woman is never trusted by the husband, nor the husband by the wife, sexual jealousy being exceedingly strong. The slightest whisper accusing a wife of infidelity is believed by the husband, and *vice versa*. But while the man punishes the woman, the woman has no means of punishing the man except by her tongue, with which she sometimes lashes him into fury. Sometimes a charge of this kind is brought against a woman by her husband for the sake of wringing the little shell-money from her which she has been able to save, also to get something from the man with whom she has committed, or with whom she is supposed to have committed adultery. But the very fact that nine-tenths of the quarrels in New Britain arise from jealousy of the women, speaks volumes concerning the conjugal mistrust and infidelity which exist in those islands.

20. The punishment sometimes inflicted upon the adulterer and adulteress is exceedingly severe. The woman is speared immediately and without mercy. The man may fall into an ambush formed by the husband and some friends. They pounce upon him, beat him fiercely with a stick, and then twist his neck as far as it is possible for them to do so. They then leave him in fearful agony in the path for any to help him who care to do so. He never speaks again. He lingers for a few days, the tongue swelling to a great size, and he dies a dreadful death.

21. Although the men are so fiercely jealous of their wives husbands will sell them to other men, and in selling them, will renounce all right whatever to them. I may say, however, that this is rarely done. But such was the case of *Ula*, who was so ill-treated by her furiously jealous husband, that I purchased her freedom from him, paying him one hundred fathoms of shell-money for her. She afterwards married a young man named *To Rue*, who eventually resided with her near to her former husband. It is needless to say that I did not sell her to the young man. She was free. I simply redeemed her from a hard and painful life. Other cases have come under my notice where men have received back the purchase price, and the women have become the wives of other men. The marriage tie has much the appearance of a money tie, and exclusive marital rights seem to be in not a few instances an acquired right by virtue of purchase. But this does not apply in all cases. Nothing but blood can satisfy some men for the infraction of their marital rights.

22. Divorce is a very simple matter in New Britain. I have known a wife to leave her husband and return to her friends.

She may complain of ill-usage and her friends may believe her. Her husband may attempt to get her to return to him, but her friends standing by her he dare not attempt violence, so she remains with her friends. In the end he may demand that what he paid for her should be refunded by her friends. If they think enough of her to do that, and I have met with a few such cases, the money is repaid, and the wife is free.

23. The children belong to the same class as the mother. The uncle (maternal) has often been called *father* in my hearing while the father's brother has been termed on Duke of York *Labag*, and on New Britain *Matwagu*, which may be rendered uncle. The aunt on the mother's side has also been termed mother.

24. A man may have as many wives as he can afford to purchase. If he cannot afford to purchase one and his credit is low, he may have to remain single. The headmen are generally rich men, hence they invariably have a number of wives, ranging from three to six. Usually the number amongst the ordinary people is confined to one or two.

A dissertation upon the evils of polygamy would be quite out of place here. An account of the home life and other matters I must reserve for some future paper.

In the present paper I have carefully avoided any doubtful matter, and have stated as simply as I could what I have met with and seen in connection with the marriage customs of the New Britain people. I regret that I did not pay more attention to this and kindred subjects while on the islands, but perhaps enough has been written to guide the thoughts and help others who may be well versed in anthropological lore to form accurate opinions regarding the New Britain marriage customs in their bearing upon and relations to the marriage customs of other savage lands.

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## ANTHROPOLOGICAL MISCELLANEA.

### SKETCH of API GRAMMAR.

By SIDNEY H. RAY.

Api is one of the larger islands in the Northern New Hebrides, situated in 16° 42' S. lat., and 168° 15' E. long. It is about twenty-five miles long by seventy broad, and is of volcanic origin, with a peak 2,800 feet high. The island was first seen by Captain Cook in July, 1774, but has been rarely visited by Europeans. The population is probably about 3,000. The island is sometimes called Tasiko, Tasiwo, or Tasitso.

Several dialects are spoken on the island for which short notes are given by Dr. Codrington in his "Melanesian Languages."<sup>1</sup> The "Sesake-sprache auf Api," shown by Von der Gabelentz,<sup>2</sup> though undoubtedly very like that of South-east Api, is really that of the island of Mae which lies to the south. The short vocabulary appended will show the amount of variation.

The source of the present sketch is a translation of the gospel of St. Mark in the Baki dialect,<sup>3</sup> for which I am indebted to the British and Foreign Bible Society. This has been compared with a slip printed by Bishop Patteson, and a few MS. notes kindly lent to me by the Rev. Dr. Codrington.

### § 1. ALPHABET.

1. Vowels: *a, e, i, o, u.*

2. Consonants: *k, g = ng; b, p, v; t, d, j; l, r, y; m, n; s.*

The Melanesian *q = kpw*, does not appear in the translation, but in the MS. notes *qilamira* is spear, and *qiliwili*, buy, in West Tasiwo. Two sounds are probably represented by *g*; the *ng* in sing and *ng* in finger. The latter is printed *ngg* in the vocabulary.

Sometimes *b = mb, p = mp*, and *d = dr*.

3. Diphthongs: *ai, ou = ou* in loud.

4. The changes common in the neighbouring languages are found also in Baki; *b* or *mb* changing to *v*; *t* to *j* and *s*. A

<sup>1</sup> "The Melanesian Languages," by R. H. Codrington, D.D., Oxford, 1885.

<sup>2</sup> "Die Melanesischen Sprachen," von H. C. von der Gabelentz, Leipzig, 1873.

<sup>3</sup> "The Gospel according to Mark in the Baki Language, Epi, New Hebrides," Sydney, 1886.

characteristic sound is *j* (probably *tch*), which represents the common *r* and *l*, as in *jio*, look (*leo*); *jegi*, *chang*, wind (*langi*); *juma*, hand (*ruma*); *vujo*, full (*vura*). In the pronoun of the second person *j* seems to represent *k* (*jau* for *ko*). The common *t* is, in Baki, represented by *r*, as *veru*, stone (*vatu*); *mira*, eye (*mata*); *rama*, father (*tama*).

## § 2. ARTICLE.

1. The demonstrative *na* is found. *Nalo*, they; *nai*, he; *na marian*, death, *na ioluan*, the word. *Ta vako*, a boat; *tembiemi*, fire, may perhaps show a change to *t*.

2. Names of persons begin with *ka*, or *k*. *Ka rama*, father; *ka ine*, mother; *ku rua*, brother; *ka-lisa*, young man; *ka yimo*, a household; *ka Satana*, Satan. This may be a personal article *ka*.

3. The numeral *tai*, one, is used as an indefinite article, *toro tai*, a man.

## § 3. NOUNS.

1. There are the usual two classes of Nouns. The first takes a suffixed possessive pronoun, the second indicates possession by the use of a separate noun. Examples: *juma-ku*, my hand; *karama-no*, his father; *kiemiu atevi*, your servant; *kiano meoulian*, his life.

2. The plural is shown by *nalo*, following the noun; *veru nalo*, stones; *yime nalo*, houses. In W. Api, *sua nala*, boys.

3. The feminine, when necessary, is distinguished by the addition of *buvino*; *ki riki neruko buvino*, my little daughter. *Buvino* is the common *vavine*.

4. Verbal substantives are formed by the suffix *-n* or *-no*; *ilian*, word, from *ili* to say; *monean*, faith, from *monea*, believe; *tumboian*, authority, from *tumbo*, chief.

5. The words *toro* (singular), and *tomu* (plural) form with the preposition *na*, personal substantives. *Toro na vivisisian*, man of sowing; *tomu na navadrian*, men of fishing; *toro Kalilee*, a Galilean; *tomu veri*, four persons.

6. Many nouns have a prefix *buru*; *burusuku*, mountain; *burusimaro*, tomb; *burujo*, neck; *burujuvo*, tooth.

## § 4. PRONOUNS.

### 1. Personal.

Singular: 1. *kiniu*; 2. *jau*, so; 3. *naiu*, *nai*, o, *nio*.

Plural: 1. inclusive, *kito*; exclusive, *kumemi*: 2. *kamiu*; 3. *nalo*, *lo*.

The shorter forms are used after verbs and prepositions. Examples: *kiniu na bika denikamiu*, I ask from you; *jau kombi tu*, thou standest; *nai mbioso*, he calls thee; *kito ro ueio*, we kill him; *kumemi ni mila*, we make; *kamiu kume*, you come: *nalo a miberi kanio*, they say to him.

2. *Possessive* (suffixed to nouns denoting things closely connected with the possessor, such as relations, parts of the body, &c.).

Singular: 1. *-ko, -ku*; 2. *-mo*; 3. *-no, -ne*.

Plural: 1. inclusive, *-dro*; exclusive, —; 2. *-miu*; 3. *-lo, -le*  
*Juma-ku*, my hand; *jumamo*, thy hand; *jumaño*, his hand; *karama-dro*, our father; *nire-niu*, your eyes; *miralo*, their eyes. On the west coast of Api, Bishop Patteson gives *konu-nggu*, my nose; *kiliyama*, thy ear; *chima-na*, his leg.

3. *Interrogative*. *Kei*? who? *kei no*? who this? *Siamo kei*? thy name who? *kei jokoli kiniu*? who touched me? (In North-west Api, *isei*? who?) *Vai*; what? *Na la vai kaniso*; I do what to thee? *Kiniu na veri vai*? I say what? *Ka vai*? for what? why?

4. *Indefinite and Demonstrative*. *Tene*, this; *tena*, that; *tetai*, anything; *tomu telambo*, many persons; (*tea lapa* in Nguna is "many"); *ti*, one, other; *ti jumamo meruo*, *ti jumamo mali*, one on thy right hand, the other on thy left; *nrolu tai*, some, others; *naine*, this person. In North-west Api, *ani*, *nan*, this.

## § 5. POSSESSIVES.

1. Several words are used as possessive nouns. The most general is *kia* (*tia*).

Singular: *kia-ku*; *-mo*; *-no* (*-na*); plural: *kia-dro*; *-miu*; *-lo*.  
*Kiaku kulumarauo*, my garment; *kiamo monean*, thy faith; *kiano marambo*, his path; *kiadro venuo*, our land; *kiemiu ilian*, your saying; *kialo ioluan*, their word. On the west coast *batsotso kianguu*, *batsotso kiema*, *batsotso kiena* are given for my, thy, his iron nail.

2. *Kana* is used with the meaning of a thing for my use, thy use, &c.

Singular: *kana-ku*, *-mo*, *no*. Plural: —

*Tai be kanamo*, one for thee; *tai be Mosese kanano*, one for Moses.

3. The possessives used with food and drink are not clear from the gospels, but Bishop Patteson gives *kanngu*, *kama*, *kana*, for "my, thy, his food"; and *manguu*, *momu*, *mona*, for "my, thy, his drink," on the west coast.

## § 6. ADJECTIVES.

1. Adjectives follow the noun. *Tira nrolu*, a woman other; *toro jumana maro*, a man his hand dry.

2. Demonstratives are *ne*, *na*, this, that, sometimes reduplicated, *nene*; *tira ne*, this woman; *vio na*, that place; *yimo nene*, that house.

3. Degree is expressed by means of the word *laka*, more, with the preposition *ka*. *Kei be toru laka*? who is greater? *vio mabi laka*, place high very; *nai bio jouo laka*, he cried more loud; *maka kiana tevi nrolu toru laka ka tenalona*, there is no other (of) his commands greater than this.

4. Reduplication and the prefix *ma* are seen in *melukuluku*, weak; *madrulu*, opened; *mukulukulu*, shaking.

## § 7. VERBS.

1. Verbs are often used without particles, with what appear to be shortened forms of the personal pronouns:

Singular: 1. *na*; 2. *ka*, *ko*; 3. *nai*.

Plural: 1. inclusive, *ra*, *ro*; exclusive, *ni*; 2. *ku*; 3. *a*.

The verbal particles are *ji* = *si*, *mi*, *vi*, *ri*.

*Ji* is, perhaps, the *ti* of Maewo and Espiritu Santo, which denotes continued action; *nai jerarago*, he asks; *ka sidromi*, thou lovest; *mi*, is indefinite, the *ma* of Ambrym, Arag, &c.; *ni mijogi*, we heard; *tu miolu*, the cock crows; *kei mudri*, who gave.

*Vi*, is future, the *vi* of Arag and Oba; *ku vudri*, ye shall give; *a vudrilari maro*, they will take up snakes; *ni vi iali*, we shall see. *Ri* is used as future in the third person singular; *nai ri la vanilo*, he will give to them; *nai ri maro*, he will die.

3. A definite past is denoted by the adverb *rue*, used with the particle *mi*; *a miali rue*, they had seen, *niadru moluo rue*, the bad spirit has gone out; *nai maro rue*, he was already dead; *a miali rue*, they saw.

4. The simple verb with *ko*, or *ku* is used for the imperative; *ko jogi*, hear thou; *ko jio*, look thou; *ku monea Atua*, believe ye God; *ku verenio*, say ye it. The prohibitive has *re* added; *ku monea re*, do not believe; *kubi merou re*, do not fear. In the third person *mbo ka nai ri maro*, good that he shall die, translates "let him die."

5. The negative is expressed by *maka* before the verb, or by *re* after; *maka ra mje toko tai*, not we have bread one; *maka ko veri tetai*, not thou say anything; *totou ri maro re*, the worm will not die; *na muni re*, I will not drink.

6. The interrogative is *bo* at the end of the sentence: *mbo ka toro tai ri la titigi koana bo?* is it good that a man put away his wife? *ni vari vanilo a senio bo?* do we give to them (that) they eat.

7. A dependent verb is connected by the conjunction *ka*; *kubi jikia ka nai jo vataro*, ye know that he stands near.

8. The demonstrative *mbi*, or *mbe* is frequently added to the short form of pronoun used with the verb, *nambe*, *kubi*, *ambe*, &c. Compare the Sesake and Nguna *pe*.

9. The verb *la*, to make (Arag, Maewo, Oba, *lai*, to give) is used with other words as a causative; *laiali*, to make see, find; *laruri*, to make alive, save, heal; *la vatigi*, make ready; *la titigi*, put away.

## § 8. ADVERBS.

1. Directive: *tavio*, forth; *nai ba tavio*, he went out; *me*, hither; *a mbinime*, they came hither; *bato*, down; *mabi*, up; *a suvani vato*, they cast down.

2. Interrogative: *Ka vai?* for what? why? *ka vai ko mbio kinii mbo?* why callest thou me good? *jumambe?* how? *na la jumambe ka na je nameoulian?* I do how that I have life? *nai mijikia tenalo*

*ne jumambe?* how does he know these things? *nagi?* when? *nagi tenulona a malubo?* when do these things happen?

3. Time: *bogona*, when; *bogona a mijogio*, when they heard it; *bogonene*, then; *bere*, again; *nai ba tavio bero*, he went out again; *ka bijo*, in the morning; *kijeri*, in the evening; *kari*, after; *karina bogoti ari*, after six days; *dramariga*, always; *beni*, to-morrow; *namba*, when, while; *namba a mijikia*, when they heard; *rue*, already.

4. Place: the word *vio*, a place, which is used as a noun, seems to be the common word *vea*, a place where; *aviona*, at that place, there; *aviona kubi la vatigi kari kito*, there make ready for us. *Iako* and *ne* are also used for there and here, *a joutano iako*, they sit there; *a ju ne*, they stand here. *Uto*, on the shore; *vatarambe*, afar; *biamu*, first.

5. Manner: Adjectives are used as adverbs of manner. *Nai mila tenalo nonovio mbo*, he does all things well; *nai bio jous*, he cried loud. A suffix *ga* is added to pronouns and other words with the meaning "only." *Kiniuga*, I only; *nuloga a ju*, they stood alone; *tanogu bari marati*, the earth bears fruit of itself; *ko moneuya*, you only believe.

## § 9. PREPOSITIONS.

1. Genitive *na*, of; dative, *bani*, *kani*, *burei*, *iali*; ablative, *deni*; locative, *a*, *ea*, *iki*; instrumental, *ka*; *ta*.

*Na* is the common *ni*. *Iesi na yulu*, stand of candle; *suku na olive*, hill of olives.

*Bani* from the verb *ba*, to go. *Nai mili ioluan banilo*, he said the word to them.

*Kani*. *Na beri kaniso*, I say to thee.

*Burei* is used like *goro* in the neighbouring languages, in the sense of opposition, against. *Nai mieli bure tinabio*, he walked through a field; *ni mberi bureilo*, we speak against them; *a mili bureilo*, they said among themselves.

*Iali* is the verb "to see." *Nai babin ea tavako mialilo*, he went into the ship to them.

*Deni* is the same as in all the neighbouring languages, "from," "away from." *Ko tumolu denio*, come out from him; *deni vio iako*, from that place; *avana toro tai burodeni yimo*, if a man leave a house.

*A*, *ea*, is the common locative "in" or "at." *Ea tei*, in the sea, *ea baja*, in the cup.

*Iki*, by the side of. *Iki marambo*, beside the path.

*Ka*, with; *Ka ue*, with water; *ka bijino kameli*, with camels' hair.

*Ta*, with reference to place, belonging to; *Toro ta yimo lu*, men belonging to the holy house.

2. Other examples of prepositions are:

*Kamuka*, before. *Kamuka miramo*, before thy face; *a mijoru kamuka nia*, they fell before him.

*Tevelino*, on the other side (compare the Arag *tavala* in *tavala walu*, the other side of the valley). *Tei tevelino*, the sea its other side.

*Biori*, for the sake of, because (Sesake and Nguna, *oli*). *Biori siaku*, for my name's sake.

*Liviri*, round about. *Tinumbe toru a jelivivialo*, a crowd great they (were) round about him.

*Sori*, after; *Jaki sori*, go after; *jaki*, to go.

*Ebiso*, in the midst; *Ko tu ebiso*, stand in the midst.

## § 10. CONJUNCTIONS.

1. *Nai*, and, used only with proper names. *Saimono nai Adru*, Simon and Andrew; *jimbe*, like, as; *Atua kiano merimerano jimbe ka toro tai ri visivisi kurukuti ea tano*, God his kingdom like to a man sowing seed in the earth; *bo*, or; the same as the interrogative at end of a sentence. (The *Nguna kite*, or, is used in the same way); *timbema*, lest; *timbema nai ri me sombueli*, lest he shall come suddenly; *avana*, if; *avana ni veri*, if we say; *ooa*, till; *tara ne a varilaka re. ooa vitenalona a malubo*, this generation shall not pass away, till these things happen.

2. There is a peculiar use of the pronoun to express the person accompanying. *Nimbi to kumemiko boyoti tolu*, we have been together three days; *jau bunu kombi tu kamiko toro ne*, thou also wast (stood) with that man; *nai kaliko bue dededi*, he (was) with wild beasts; *naine ri vui ea baja kumemi liko*, that one shall dip in the dish with me; *nalo ne kaliko*, they that were with him. With proper nouns *nai* is used for *ka*; *buri Pita, Takobo, nai Tuan nailiko*, took Peter, James, and John with him.

## § 11. NUMERALS.

1. Cardinal: *tai*, one; *luo, juo*, two; *rolu, tolu*, three; *veri*, four; *jimo, limo*, five; *ari*, six; *ajuo, aluo*, seven; *koveri*, nine; *duũlimo*, ten; *duũlimo mba tai*, eleven; *duũlimo mba juo*, twelve; *duũlimo toromomo* (ten times the whole man?) one hundred; *duũlimo toromomo va juo*, two hundred. These agree with the numerals from the west and north-west given by Dr. Codrington.<sup>1</sup>

2. Ordinals: *biamu*, first (Sesake and *Nguna pea*); *lie*, second. The other ordinals in the translation are the same as the cardinals.

3. Adverbs: *valuo*, twice; *varolu*, thrice, the third time.

## § 12. EXCLAMATIONS.

Vocative *O* after the noun as in *Faté* and *Nguna*; *Israela O*; *Aua!* woe!

## § 13. EXAMPLES.

1. The parable of the sower, Mark iv, 3.

*Toro na visivisian bano ka ri visivisi*:

*Bogonene nai bisibisio, kurukuti tai mijoru iki marambo, menu nalo a mbini me a jelario.*

*Nrolu tai mijoru vio boroboro, a vio na maka sano tano be telambo; miluo sombueli, kanio maka sano tano bululuo*:

*Nambani maregio jo mabi, mijegio; kanio maka ba bati maro.*

*Nrolu tai mijoru bure soro na a mbo niononoti, soro na a mbe niononoti miluo a muebinio, maka bari marati.*

*Nrolu tai mijoru ea tano mbo, bitovi, miluo, de búro; a mbari*

<sup>1</sup> "Melanesian Languages," p. 469.

*marati, tai duŭlimo va rolu, tai duŭlimo vaari, tai duŭlimo toro-momo.*

*Nai bereni, toro na be tilinene, ri jogio.*

2. The parable of the vineyard : Mark xii, 1-9.

*Toro tai membija tinabio na buruvaini, jumbija sio jeliwiva, kili buŭli tena ri vii maravaini toa, mila yimo miasi, bario bani tomu na mbitikarian nalo, bano vio nrolu.*

*Bogo na maratai nai mila kiana tevi tai ba tomu na mbitikarian nalo, ka nai rudrokari deni tomu na mbitikarian marati na vio na buruvaini.*

*A mudrio, a mueio, a jidigio jumano iauo.*

*Nai mila kiana tevi nrolu banilo bereio ? a mue toao ne barim-barino, a mbejuku kiriboba kano.*

*Nai mila nrolu ; a muembini naitu : telambo bijaio ; a mue tai, a mila binibini tai.*

*Nai mijekari takurano jokiano, kinerino nai jidromi mbo : nai mila naitu banilo iorou, beri, A monea kineruku.*

*Tomu nambitikarian nalo a mili bijagu, Tetene ri varikari na tum-boian ; kito, ro ueio, karina be kiadro venuo.*

*A mudri naitu, a muembinio, a mbukio tavio na jouro na buruvaini.*

*Narue tumbo na vio na buruvaini ri la jumambe ? nai ri me ri la binibini tomu nambitikarian nalo ri vari tinabio na buruvaini vani tomu tealo*

English.	Baki.	W. Api.	S.E. Api.	Sesake.	Fate (Havannah Harbour).
1 Arm, hand	juma	chima	aru, lima*	ru	meleru, ru
2 Body	mokoti			saranaleokakana	kwatoko...
3 Belly	mambono		sine*	mbwele	kwela
4 Blood	burukija			uda	tra
5 Ear	tilena	kiliga	dalinga	dalinga	taliga
6 Eye	mira	konomerina	mata	mata	mita
7 Flesh	niambele			bokasi	la bwakas
8 Finger	marijukijuma		snlima*	kini	kini
9 Foot, leg	ja	cha	tua	m wele, tua	tuo
10 Hair	biji		lulu, ilu*	nlun	lun
11 Head	harimbari		ba*	bau	bou
12 Heart	tine			batiran	kbo
13 Neck	burujo			kaundaleo	noa
14 Skin	kuln		kuln*	weli	wili
15 Soul	nunn				ata, maru
16 Tongue	burumina		pomeno*	mena	meua
17 Voice	niono			leo	lio
18 Name	sia	kia		ngisa	gie
19 Bird	menu	menn	mann	manu	manu
20 Branch	jati			dara	ara
21 Cloud	meliju	malinggo	malinggo	malinggo	tai-inlagi
22 Day	igian	emchem	masoso	aleati	aliati
23 Dog	kuli	kuli	koria	koria	koria
24 Earth	tano			tano	tano
25 Fowl	tu	to	toa	toa	toa
26 Field	tinabio			roara	atalimate
27 Fire	sembi		kapi*	kapn	kabu
28 Fish	niadro	yika	ika	ika	ika
29 Fruit	marati			wa	ua
30 Land	vio, vouua	venua		vanua	fanua
31 Moon	simbierio	varin	atelang, varin*	masina	atulagi
32 Mountain	suku			tava	tafa
33 Night	bogian	ombongi	pongi	bongi	bog
34 Pig	bue	piu	wanggo, pui	wanggo	wago
35 Salt	solo			tasi	tasmen
36 Sea	tei	tsi, tzi	muana, si*	tasi	tas
37 Seed	kerukuti			mbatina	bati
38 Serpent	maro	minya	mata	mata	mata
39 Star	maribitano		masoe, rue*	masoe	masei
40 Stone	veru			vatu	fatu
41 Sun	maregio	{ maravinia? merali* }	mat ni elo	elo	elu
42 Tree	buruesi		kau	kau	kasu
43 Water	ue	ui...	uoai, ui	uoai	uoai
44 Wind	jegi	chang	langi	langi	lagi
45 Man, male	toro, sumauo	orumau	aru, atamoli	kanau, tamoli	nata
46 Woman, female	tira, buvino	sira nala...	uggoroi	koroi	kuruni
47 Father	teta, ka rama		ara*	tama, popo	tema, mama
48 Mother	ka iue		awia	tete, qila	bwile
49 Child	ki nero	tsutsua	susua*	gari	nani
50 Brother	ku rua			tai	bwali
51 Sister	ko vivin			gore	gore
52 Husband	k-oa				uawota
53 Wife	koa			goroi	garuni
54 Chief	tumbo			nawota	nawot
55 House	yimo, kunua		uma*	kopn	suma
56 Road	marambo		dapa*	matakisala	bua
57 Food		vivana		vinanga	finaga
58 Ship	tanako	wangga	rarua, wangga	rarua	rarua
59 Ask	rarago			pisusu	tagof
60 Come	me, binime	virumi		pa vei	banamai
61 Drink	muni			sorovi, munungi	muni
62 Eat	jena			kani	bani
63 Give	vari	keri		tape	tuo, fitu
64 Go	va, vano	ven		pa, va	bano
65 Hear	jogi	kangge		dongo	rogi
66 Know	jikia			atai	atai
67 See	iali			punusi	libi
68 Speak	beri, ili	visi		pasa, noa	bisa
69 Stand	tu			to, du	to
70 Weep	tegi			nggai	tagi, gei
71 Bad	boba		poparua*	sa	sigisigle...
72 Good	mbo	sumara*	po*	wia	wia
73 Large	toru		taura	mbula	kwila
74 New	bou			van	fao
75 Old	terimortuo			tea nai	tuai
76 Red	bejeki		ihili*	miata	miel
77 Small	teliki, kiri		takisi*	ugiki, riki	giki
78 White	mlubu		uwowo*	gaikai	tare

Sources of the foregoing vocabulary:—Baki from the Gospel; W. Api, S.E. Api, and Sesake from Bishop Patteson<sup>1</sup>; (W. Api marked \* are from the N.W. and N. S.E. Api marked \* are from Dr. Codrington); Fate from a translation of St. Luke's Gospel<sup>2</sup>; Ambrym from Codrington<sup>3</sup>, Gabelentz<sup>4</sup> (marked \*), and Goodenough<sup>5</sup> (in Italic); Malikolo from a vocabulary by Goodenough in the dialects of Sandwich Harbour and South West Bay (the latter in Italic); Arag, Maewo, and Oba from Codrington<sup>6</sup> and the Prayer Books of the Melanesian Mission; Espiritu Santo from Codrington<sup>7</sup>; and Goodenough (Italic) with a few marked \* from the neighbourhood of Cape Lieburn.

## VOCABULARY.

<i>Ambrym.</i>	<i>Malikolo.</i>	<i>Pentecost Is. Aray.</i>	<i>Aurora Is. Maewo.</i>	<i>Lepers Is. Oba.</i>	<i>Esperita Santo Bay of SS. Philip and James.</i>
vera ...	...	lima ...	lima ...	limegi ...	gave, lina.
...	...	repehi ...	turu ...	turegi ...	oson.
...	...	sigengi ...	taqangi ...	taqangi ...	tia.
...	...	daga ...	dai ...	dai ...	tsae.
ringi ...	talinga ...	gero ...	qoroi ...	qerogi ...	saliga.
meta ...	meta, mata ...	mata ...	mata ...	mata ...	mata.
...	...	visigoi ...	visigoi ...	vihihogi ...	visigo.
pagahau veran	...	pihn ...	bisui ...	bisugi ...	pisu.
li ...	...	qala ...	rongo ...	nggarugi ...	nae, para.
...	umbarr ...	flu ...	ului ...	vulugi ...	vul.
botu ...	...	qatu ...	qatui ...	qatugi ...	re.
lo ...	...	lolo ...	taqangi ...	taqangi ...	...
ili, wolu ...	...	vinui ...	vinui ...	vinugi ...	tinina.
...	...	vui, atmate ...	wui, tamani ...	vui, tamte ...	...
meen ...	meme ...	mea ...	luemei ...	meagi ...	meme.
...	...	leo ...	leo ...	leo ...	...
se ...	...	iha ...	sasai ...	he ...	gise.
bwehel ...	gambo ...	manu ...	manu ...	manu ...	nann.
...	...	guqengi ...	qong ...	bongi ...	ovoi.
kuli ...	lipaeh ...	...	...	...	...
tan ...	rran, ten ...	balataa, tan ...	tano ...	tano ...	toa.
to ...	tao ...	toa ...	kur ...	toa ...	uma.
ur* ...	...	ara ...	tamatua, mele ...	talune ...	gapu.
av ...	agambrr ...	avi ...	avi ...	avi ...	natj.
malo, lka ...	...	ige ...	masi ...	ige ...	va.
wi ...	...	wai ...	oi ...	wai ...	vanua.
vir ...	...	vanua ...	vanua ...	vanue ...	vula, apotia.
ola, awati ...	eruil ...	vula ...	wula ...	vule ...	vatroti.
...	...	vusi ...	rewo ...	vusi ...	bongi.
...	...	qong ...	qong ...	bongi ...	pongi.
bue ...	mbruai ...	qoe ...	qoe ...	boe ...	poe.
...	...	tahi ...	tas ...	tahi, navo ...	tasi.
tie ...	rras, tes ...	tahi ...	lama ...	wawa ...	getja.
mar* ...	...	...	...	...	...
moho ...	musi ...	visiu ...	vitui ...	visiu ...	vitui.
var, vet ...	var, vet ...	vatu ...	...	...	sule.
yial ...	linal ...	alo ...	aloa ...	aho ...	{ maso, alo* mut zu sore.
liye ...	...	gai ...	geiga ...	gai ...	gan.
we ...	wai ...	wai ...	bel ...	wai ...	pei, tei.
leng ...	eang ...	lang ...	...	...	...
vanin, ta* ...	morot ...	atatu ...	tatua ...	tangaloe ...	tatsua, tandro.
vihin ...	mormor ...	vavine ...	tawone ...	vavine ...	gajae, wahine.
...	...	tama, tata ...	tata, tama ...	mama ...	etai.
...	...	ratahi ...	veve ...	garuwegi ...	tiai, tina.
terera ...	...	nitui ...	natui ...	natugi ...	paule.
...	...	...	tasi ...	tehi ...	tasi.
yafu ...	sum ...	ratahigi ...	nagonago ...	ratahigi ...	varese.
hale, ima ...	yim ...	ima ...	vale ...	vale ...	ima.
ye* ...	...	hala ...	tursala ...	matahala ...	rio.
bulbul ...	uanka ...	ginaganiana ...	sinaga ...	hinaga ...	sinaga.
...	...	wanga ...	aka ...	anga ...	aka* ovo, ure.
mea, vami ...	vanimai ...	tataro ...	tataro ...	tataro ...	...
...	...	sumai, vanomai ...	sumai, vanomai ...	humei ...	so mai.
...	...	...	...	...	o-o.
ngene ...	...	gani ...	gangan ...	...	kani.
sene,* va* ...	...	sogoi, lai ...	lai ...	lai ...	lavi.
ian, mul* ...	van ...	van ...	rasu, vano ...	van ...	mule, van.
rongta ...	...	rongo ...	rongo ...	rorontagi ...	rogotag.
kelea* ...	...	ilo ...	gigilea ...	ilo ...	...
lehe ...	...	gita ...	ete ...	lehe ...	reni, kilei.
fle ...	...	avo, bev ...	laqa, veti ...	ware, veve, laqa ...	veti.
...	...	...	tu ...	tu ...	turi.
mduring* ...	...	...	...	tangi ...	...
hagavi ...	...	hantai ...	seseta ...	csi ...	oso.
bua ...	ilei, navoi ...	tavuha ...	wia ...	rea ...	pei, taburi.*
tiam ...	...	gaivua ...	lata ...	lawua ...	tagasnei, labu.
...	...	...	...	...	...
...	...	memea ...	memea ...	memea ...	gagara.
rakakre ...	...	tirigi ...	riki ...	biti ...	tagapiu, bariri.*
...	...	maita ...	singara ...	navuti ...	voke.

<sup>1</sup> "Vocabulary of Melanesian Languages, Sesake, New Hebrides Islands," 1866.

<sup>3</sup> "The Gospel according to Luke translated into the language of Efate, New Hebrides, by the missionary at Havannah Harbour," Sydney, 1877.

<sup>3</sup> "Melanesian Languages," p. 39, &c.

\* "Die Melanesischen Sprachen," 1873, p. 32.

<sup>5</sup> "Journal of Commodore Goodenough," London, 1876, p. 36, &c.

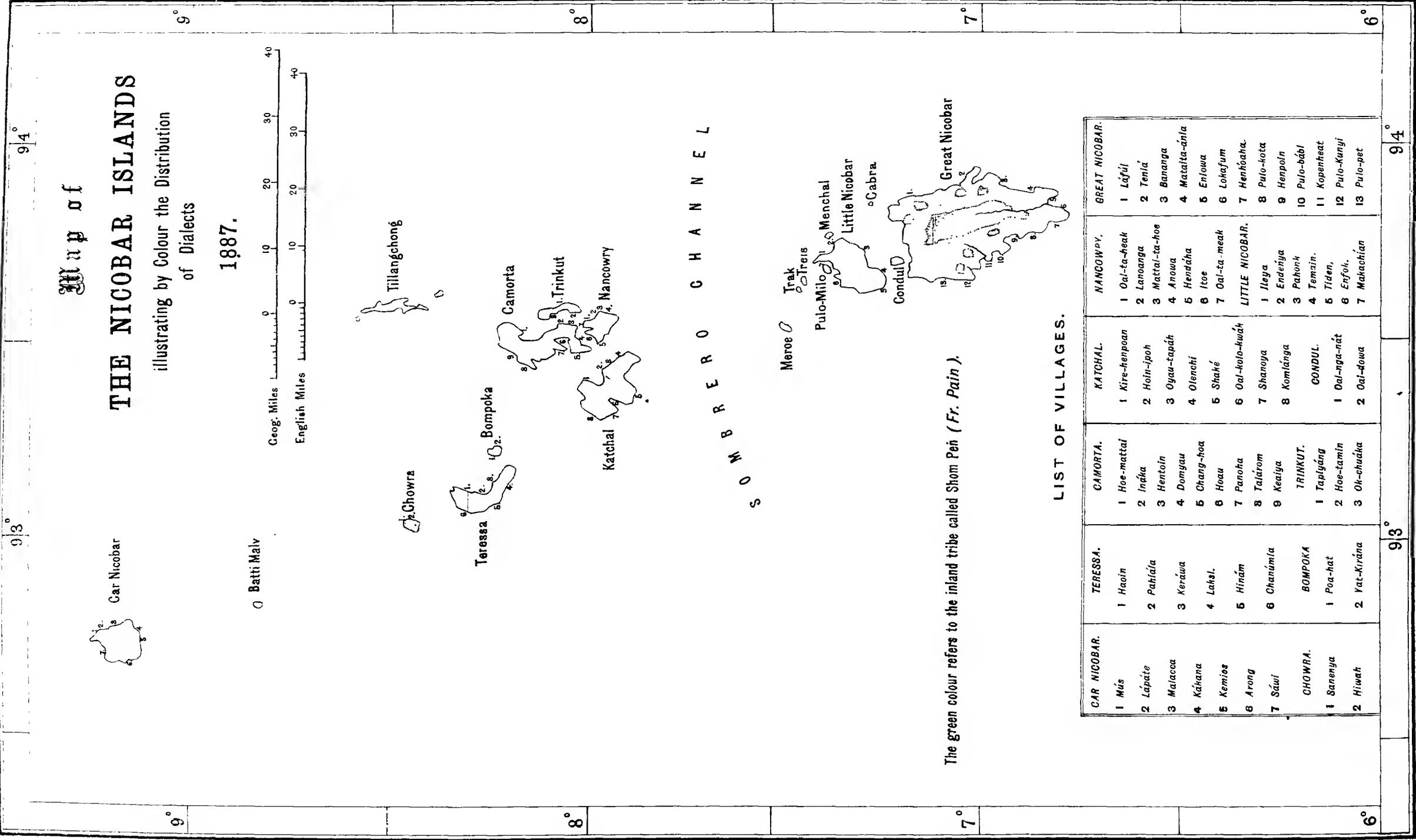
NOTE.—In Fate, *g* = *ng* or *ngg*. *Arag, q* = *kpw, kbw, pggbw*. *Maewo q* = *kmbw*. *Oba q* = *nggmbw*.

## CONTRIBUTION TOWARDS A VOCABULARY OF THE CAYAPAS.

THE following list of words used by the Cayapas tribe in the interior of Ecuador has been forwarded to the Anthropological Institute by Mr. C. Cheston. The information was collected by Mr. Gustavus Wilczynski, who has for many years carried on large mercantile transactions at the Pailon Estate at Ecuador, which brings him into close connection with the natives of the interior. The tribe is described as being pure and unmixed, difficult of approach by white men, although fairly peaceable.

<i>English.</i>	<i>Cayapas.</i>
Head.	Mishpuca.
Hair.	Achua.
Forehead.	Lechi.
Eyebrows and eyelashes.	Capupijo.
Eyes.	Capucua.
Ears.	Pungui.
Nose.	Kijo.
Mouth.	Fipaqui.
Cheek.	Teyu.
Teeth.	Tesco.
Tongue.	Nigca.
Arms.	Fiamilia.
Hands.	Fiapapa.
Fingers.	Fiamisho.
Nails.	Fiaqui.
Chest.	Fembapo.
Legs.	Embo.
Feet.	Nepapa.
Man.	Linpula.
Woman.	Supala.
Boy.	Caná.
Girl.	Guarmiguagua.
God.	Dios apa.
Life.	Sunchachi.
Soul.	Tembuca.
Walking.	Gino.
Sick.	Penhuma.
Handsome.	Unnala.
Old.	Rucula.
Singing.	Nerse.
Weeping.	Huato.
Laughing.	Ucagto.
Speaking.	Pacto.
Sleeping.	Casto.
Sleep.	Pununiyaguanmi.





LIST OF VILLAGES.

CAR NICOBAR.	TERESSA.	CAMORTA.	KATCHAL.	NANCOWRY.	GREAT NICOBAR.
1 Mús	1 Haoín	1 Hoe-mattai	1 Kire-henpoan	1 Oal-ta-heak	1 Láful
2 Lápáte	2 Pahlá'á	2 Iná'á	2 Holu-ipoh	2 Lanoanga	2 Tenlá
3 Malacca	3 Keraúva	3 Hentoin	3 Oyau-tapáh	3 Mattai-ta-hoe	3 Bananga
4 Káhana	4 Lakal.	4 Domyau	4 Olenci	4 Anowa	4 Matatta-ánla
5 Kemias	5 Hinám	5 Chang-hoa	5 Shat'é	5 Hendáha	5 Enlawa
6 Arong	6 Chanúma	6 Hoaú	6 Oal-kolo-huá'h	6 Itoe	6 Lohafum
7 Sáuí	7 Panoha	7 Panoha	7 Shanoya	7 Oal-ta-meak	7 Henhóaha
	8 Talárom	8 Talárom	8 Komlánga		8 Pulo-kota
	9 Kealya	9 Kealya	CONDUL.	LITTLE NICOBAR.	9 Henpoln
		TRINKUT.	1 Oal-aga-nát	1 Ileya	10 Pulo-bábl
	1 Poa-hat	1 Taplyáng	2 Oal-dowa	2 Enderiya	11 Kopentheat
	2 Yat-Kirána	2 Hoe-tamin		3 Pahonh	12 Pulo-Kunyi
		3 Ok-chuáka		4 Temsin.	13 Pulo-pet
				5 Tiden.	
				6 Enfoh.	
				7 Mahachian	

THE JOURNAL  
OF THE  
ANTHROPOLOGICAL INSTITUTE  
OF  
GREAT BRITAIN AND IRELAND.

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DECEMBER 11TH, 1888.

FRANCIS GALTON, Esq., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The election of R. B. HOLT, Esq., of 10, Bedford Place, Russell Square, W.C., was announced.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From the BERLIN GESELLSCHAFT FÜR ANTHROPOLOGIE, ETHNOLOGIE UND URGESCHICHTE. *Zeitschrift für Ethnologie.* 1888. Heft iv.

From the DEUTSCHE GESELLSCHAFT FÜR ANTHROPOLOGIE, ETHNOLOGIE, UND URGESCHICHTE. *Correspondenz-Blatt.*—1888. No. 10.

From the ROYAL SCOTTISH GEOGRAPHICAL SOCIETY.—*The Scottish Geographical Magazine.* Vol. iv. Nos. 12.

From the SOCIETÀ ITALIANA DI ANTROPOLOGIA, ETNOLOGIA, E PSICOLOGIA COMPARATA.—*Archivio per l'Antropologia e la Etnologia.* Vol. xviii. Fas. 2.

From the ACADEMY.—*Boletín de la Academia Nacional de Ciencias en Córdoba.* Tomo xi. Entrega 2ª.

- From the MUSEUM.—Archæological and Ethnological Papers of the Peabody Museum. Vol. i, No. 1.  
 From the SOCIETY.—Proceedings of the Royal Geographical Society. Vol. x. No. 12.  
 — Journal of the Society of Arts. Nos. 1880, 1881.  
 — Journal of the Asiatic Society of Bengal. Nos. cclxxxiii, cclxxxvi.  
 — Proceedings of the Asiatic Society of Bengal, 1888. Nos. 4–8.  
 — Proceedings of the Society of Biblical Archæology. Vol. xi. Part 1.  
 From the EDITOR.—American Antiquarian. Vol. x, No. 6.  
 — Nature. Nos. 996, 997.  
 — Science. No. 303.  
 — Photographic Times. No. 375.  
 — Revue Scientifique. Tome xlii. Nos. 22, 23.
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The following paper was read by the Author:—

*On SOCIAL REGULATIONS in MELANESIA.*

By the REV. R. H. CODRINGTON, D.D.

It is necessary, in the first place, in speaking of Social Regulations in Melanesia to say, that my observations are limited to the Northern New Hebrides, the Banks' Islands, the Santa Cruz Group, and the South-eastern Solomon Islands. My knowledge of the social condition of the people in these groups has been derived partly from what I have observed myself, and very much from careful enquiry I have made from natives well qualified to give information. A considerable portion of the Melanesian field is thus in view, and in this there appears to be a general agreement in social arrangements: it may therefore be inferred that there is a wider likeness throughout the region occupied by the Melanesian people.

I propose to deal only with the two subjects of (I.) Marriage, and (II.) Property.

*I. Social Regulations relating to Marriage.*

The arrangement of society depends on the division of the whole population into two or more classes, which are exogamous, and in which descent is counted through the mother. With one remarkable exception, this division obtains in every settlement, large and small; and it is the knowledge of this that forms probably the first social conception in the mind of the young Melanesian. It stands foremost in the native view of mankind, and is the foundation on which the fabric of society is built up. To the Melanesian man it may be almost said that all women, of

his own generation at least, are either sisters or wives—to the Melanesian woman that all men are brothers or husbands.

An excellent illustration of this is given in a story from Aurora in the New Hebrides, in which Qatu discovers twin boys, children of his dead sister, and brings them to his wife. "Are these," she asks, "my children or my husbands?" Qatu answers, "Your husbands to be sure; they are my sister's children."

I cannot call these divisions "tribes"; the members of them are all intermixed in habitation and in property, and are equally subordinate to the chief of the place in which they dwell; the perfectly well understood and acknowledged relationship through the father connects those who through their mothers are not of kin.

Examples of these divisions may be taken from two regions: (a) where there are two, as in the Banks' Islands and Northern New Hebrides; (b) where there are more than two, as in Florida in the Solomon Islands.

(a) 1. The same two divisions run through the Banks' Islands and the Northern New Hebrides without a name; every one knows who are his kin. In the Banks' Islands the common term is *veve*, a word conveying the notion of distinction; in Lepers' Island, in the New Hebrides, there are two *waivung*, bunches of fruit. Neither *veve* nor *waivung* has a distinguishing name.

2. Each division is strictly exogamous; every member of either must marry into the other. Irregular intercourse between members of the same division is a heinous offence; should such become known the members of the other division will destroy the property of the one in which the guilt is found, without resistance or complaint.

A general term, in Mota *galiga*, embraces all of the opposite division who have been brought near by marriage, fathers-, mothers-, brothers-, sisters-, in-law. Towards all of these there is a certain degree of reserve; some, particularly mothers-in-law, are avoided. This reserve, which the natives themselves ascribe to a feeling of shyness or respect, is exercised by a man not only to those who are of his wife's kin such as her mother, but also to those who are not of his wife's kin, such as her father. There is in this matter of avoidance and reserve a good deal of diversity in the practice of different islands; in Lepers Island the intercourse of mother and son, and of brother and sister, is closely restricted. In the Banks' Islands one cannot use a word which is the name, or part of the name, of a *galiga*; and there is a set of words kept in use to take the place of those which may commonly cause a difficulty of this kind.

As this name of *galiga* applies to both sexes alike, so this reserve and avoidance of the person and name is practised by men and women.

3. It must not be thought that the male and female members of the two divisions are in fact husbands and wives ; there is no occasion on which the wives of the men of one division become common to all the men of that division. There does not appear to be any tradition that communal marriage ever existed. The story of Qat in the Banks' Islands shows individual marriage in the case of the first-made woman, whom Qat wove for himself with pliant rods and brought to life for his own wife, and whom Qat's brothers tried in vain to carry off from him for themselves. Yet there is a certain consciousness of the meaning of the words they use for husband and wife and mother.

In Mota the word used for mother, is the same that is used for the division, *veve*, with a plural sign *ra veve*. And it is not that a man's kindred are so called after his mother, but that his mother is called his kindred, as if she were the representative of the division to which he belongs ; as if he were not the child of a particular woman, but of the whole kindred for whom she has brought him into the world.

In the same way at Mota, the word for consort, husband or wife, is in a plural form, *ra soai*, the word used for members of a body or the component parts of a house or canoe. So that it is not the man and his wife, or wives, that make up a compound whole, but all the men on one side and all the women on the other ; and the wife or husband has the plural designation, because the individual man or woman represents all the rest who are in the position to be wives or husbands.

The Levirate obtains as a matter of course, so far as that a woman who has become the widow of one member of a family connexion remains as the wife of another member of the same. A wife is obtained by a certain payment, towards which the near relations of the bridegroom, both on the father's and mother's side, contribute ; it is arranged, therefore, in case of death to which member of the family connexion it will be most convenient and economical that the widow should pass, whether brother, uncle, or cousin of the deceased, of course of his own kin. In the same way an uncle on the mother's side will set up his sister's son, his nearest of kin, in life, by making over to him one of his own wives. Not that the young man had a right to his uncle's wives ; but the woman was already in the family.

4. The closest relationship is that between the sister's son and mother's brother. This follows on the descent through the mother : the child is not of kin to his father or to his father's brothers and sisters ; his mother's brother stands to him as the male representative of his kindred. At the same time all the father's brothers are called fathers, and the father's sisters mothers ; in fact, all on both sides who are near the father's and

mother's generation are called fathers and mothers, except the maternal uncles, who alone have a distinctive name. If a pedigree is drawn up, it will be found that the son takes his mother's place in it; that is to say, if A and a are brother and sister, the grandson of a counts as of the same generation with the son of A.

In the Banks' Islands the sister's son, *vanangoi*, has certain rights with his maternal uncle, *maravi*, corresponding to those of the Fiji *vasu*, but by no means conspicuous or important. It is a matter of course that the nephew should look to his uncle for help of every kind, and that the uncle should look upon the nephew as his special care. The closeness of this relation is fundamental.

It must be understood withal that the mother is in no way the head of the family; the family house is the father's, the garden is his, the rule and government is his. It is into the father's house that the young bridegroom takes his wife, if he has not one ready of his own.

5. There is in these islands a certain practice of couvade; that is, the father before and after the child's birth refrains from certain food and violent exertion which might damage the infant; but the practice of this is not conspicuous. It is considered kind and respectful to call a man when he has a child the father of so and so; his station in society is advanced by his paternity, and it is recognised in this way.

6. I can point to nothing which appears to me to represent capture in marriage, nor do the circumstances admit of such a kind of exogamy. The two intermarrying divisions live in each settlement intermixed; the inhabitants of any island or village, and any enemies they may have, are composed of the same two divisions. There is in no case war of tribe against tribe, but of village against village, or set against set; if only two families are at enmity both divisions must be represented in each.

Adoption cannot be thought of any importance; orphans are taken by near relations or childless people, or parents will give up a child to friends who wish to have it, generally in the same division.

(b) Florida, and the parts of the Solomon Islands near to it, afford the example of a district in which the marriage divisions are more than two. It is probable that the four or six found there are subdivisions of the original two. In Florida these divisions are six, and are called *kema*, a word the meaning of which I cannot explain. In strict exogamy, in descent following the mother, and intermixture of dwelling and property, all is the same as in the Banks' Islands. There are two points in which important differences must be observed.

1. Each division, *kema*, has its distinguishing name. Two of

these names are local, pointing to neighbouring islands; two are names of living creatures. It is evident that the use of names is almost a necessity to prevent confusion where many men have wives, and therefore children, of three or four different *kema*. Since all the children own the common father, the patriarchal element would soon prevail if clear distinction were not made.

2. It adds much to the distinction between the divisions that each has some one thing, or more, from which its members must most rigidly abstain, its *buto*, something that must not be eaten. The impression is deep and abiding on the mind of every child that to eat the forbidden food of its *kema* is a dreadful thing.

There occurs, therefore, the question whether there is not in this something of a totem. But one division, the *Manukama*, has its name from a bird, the osprey, and is at liberty to eat that bird, while it is forbidden to eat the pigeon.

A member of one of these divisions will probably say in answer to a question that the thing he cannot eat represents the original ancestor of his *kema*; one of the osprey division will say that his ancestor was a pigeon. The explanation of this appears to me to be found in a practice of the people of Ulawa, another of the Solomon Islands. Some of them will not eat bananas, and of late had ceased to plant any; the banana is to them what in Florida would be their forbidden food. But the origin of this restraint in Ulawa is recent and remembered; a man of much influence not long ago forbade the eating of the banana after his death, saying that the banana should represent him, that he would be in the banana. In doing this he did what is not uncommon in the neighbouring part of Malanta. In Florida, therefore, the prohibition may be taken to be of the same kind. In Bugotu, part of Ysabel, I am assured that such prohibitions have only been lately introduced.

The practice at Ulawa is illustrated by what is common at Saa, in Malanta. A man before his death will say that after he dies he will be a shark. When he is dead the people will look out for the appearance of some remarkable shark and pronounce it to be he. Certain food, cocoanuts for example, will be reserved to feed this shark. Then it often happens that a man professes to be possessed by the ghost of this man, who has reappeared as a shark, and speaking as with the voice of the dead man, he will claim the privilege of eating the food reserved for the shark. Such a person will then take his place with others who have before made the same demand; and at his death again he will be thought to become, or his ghost to inhabit, a shark. Under such circumstances, it will be freely asserted that an ancestor was a shark.

In the island of Aurora, Maewo, in the New Hebrides, women sometimes have a notion that the origin, beginning, of one of

their children is a cocoanut or a bread-fruit, or something of that kind; and they believe, therefore, that it would be injurious to the child to eat that food. It is a fancy of the woman before the birth of the child that the infant will be the *nunu*, which may be translated the echo, of such an object. Women also fancy that a child is the *nunu* of some dead person. It is not a notion of metempsychosis, as if the soul of the dead person returned in the new born child; but it is thought that there is so close a connection that the infant takes the place of the deceased. At Mota, also in the Banks' Islands, there was the belief that each person had a source of his being, his origin, in some animate or inanimate thing, which might under some circumstances become known to him.

It is possible that these fancies may serve to explain to some extent the origin of the totem.

3. A remarkable exception to the prevailing exogamous division of the Melanesian people remains to be noticed. In the south-eastern part of the Solomon Islands, in Malanta, Ulawa, and San Cristoval, these divisions are, as far as I know, altogether absent; and, moreover, descent is counted through the father, not through the mother. I cannot account for this, and do not know whether the matriarchal system does not prevail in other parts of the same islands, with which I am not acquainted. The most conspicuous example of the convade within my knowledge among Melanesians, was shown in this same region where descent follows on the father's side.

## II. Property.

1. Land is everywhere divided into (1) the Town, (2) the Gardens, (3) the Bush. Of these the two first are held as property, the third is unappropriated.

2. Land is not held in common; every one knows what belongs to himself. Yet the individual has the possession only of what he has inherited, and uses for his life-time as part of the whole property which belongs to the family. There are not two or more divisions of the land thus held in property corresponding to the marriage divisions of the people; the land of these divisions is intermixed. Probably in the origin of each settlement the members of each marriage division worked together; as it is, families have formed themselves within the marriage divisions, and the land is in the possession of families. The chiefs have nowhere more property in the land or more right over it than other men; though, naturally, they are willing to assert such claims in selling to Europeans, and often use their power to drive away the owners of gardens they desire to occupy. Before the coming of Europeans, the sale of land was not unknown, though certainly not common; of late, especially in the

New Hebrides, much land has been nominally bought from chiefs, or supposed chiefs, but by no true sale. There is a remarkable example of the fixedness of native right of property in land to be seen at Saa in the Solomon Islands, at the southernmost part of Malanta. The much greater and much more important number of the inhabitants are descendants of refugees, who came, eleven generations ago, from inland, and were received by the then owners of the place, who allowed them the use of land for houses and gardens. To the present day, with the exception of some parcels they have bought, or which have been given to them, these immigrants, even powerful chiefs, have no land of their own; it is perfectly understood that the land they occupy belongs to the original inhabitants. But, in fact, everywhere, or almost everywhere, the abundance of land makes it of little value.

3. If an individual reclaims for himself a piece of bush land, it becomes his own; and the different character of his property in it is shown by the difference in the right of succession to it. If, as sometimes happens, a village grows up in the garden ground of an individual, or of a family, the property in the house sites is recognised as not being altogether that of the occupiers. They pay no rent, but they show a certain respect and consideration for the representative of the proprietor.

4. It is remarkable that fruit trees planted, with the consent or acquiescence of the owner, upon another man's land, remain the property of the planter and of his heirs. In a true sale, the minute and accurate knowledge of property in land and trees is remarkably displayed. I once completed the purchase of a site for a mission school in the Banks' Islands, and found the rights, and the limits and value of the rights, of every man and woman concerned surprisingly acknowledged and defined by common consent. When I thought all was finished, a fresh applicant for payment on account of a fruit tree appeared from a distance, accompanied by the owner of the land on which the tree grew, who testified that the claim was good. "Certainly," he said, "the claimant's grandfather had planted that tree, and he had the right to it."

5. Personal property consists in pigs, which are everywhere much valued; money, in whatever form it is found, canoes, ornaments, weapons, and the various implements used in native life.

6. Succession to property of all kinds is regularly and properly with the sister's son, or with others who are nearest of kin to the deceased through his mother. If the owner has not made testamentary arrangements before his death, his heirs divide his personal property amongst themselves, according to their opportunity rather than their right. A man before his death will make arrangements by which his sons may receive a part at

least of his land ; or the sons after his death will redeem it from their father's kin. In doing this, they will sometimes lay the redemption money on their father's corpse, from which his proper heirs will take it publicly, so that there shall be no dispute.

Whatever property, however, a man has acquired for himself, as when he reclaims a piece of land from the bush, he may leave to his sons ; or his sons, and their sons after them, may claim. This is the source of many quarrels, the character of a piece of ground being forgotten in course of time, or disputed by the regular heirs to the rest of the land. It is evident that much of a man's personal property is the direct produce of his own industry, and will so seem to be the natural inheritance of his own children. A man will, if he can, arrange before his death that his sons shall have it ; or his sons after his death will redeem it if they can from their father's kin. But a man's kindred on the mother's side will always maintain their position as the natural and proper heirs of whatever he possesses.

It thus appears that there is a tendency to the succession to property by a man's own children, and a practical relaxation of the law by which a man's heirs were his kindred by the mother. This has followed to some extent on the occupation of new ground, and may, therefore, be thought to have been strengthened by the formation of new settlements. But it is evident that such a tendency is founded on the assertion of paternity ; and the existence of such a tendency may be taken to mark a transition from the matriarchal to the patriarchal system.

#### DISCUSSION.

Dr. E. B. TYLOR, expressing his sense of the important bearing of the paper on the principles of systems of social structure, called particular attention to the clearness with which a system of exogamy is exemplified, which is not only the simplest possible, but is probably also the most primitive. This dual division of society for the purpose of intermarriage apparently accounts for the fact that among other peoples totemic division is most often into two halves, these being again sub-divided. It is also from the dual division that the most important system of classificatory relationship is apparently devoid, as has been shown by Mr. Fison. Dr. Codrington remarks on the manner in which a particular vegetable or animal may be brought, through a rule of abstinence, into connexion with a particular ancestor. It is possible that the tribes who talk of themselves as descended from a dog or a corn-plant, may have had underlying this paradox a meaning more rational from our point of view, and the facts now brought forward show at any rate a custom actually going on, which, in a natural way, leads men to formulate a statement leading (when taken verbally) to such belief. Enquiry would have to be made how far similar commemoration by abstinence, and consequent choice of a totem, prevails among tribes elsewhere in the world.

Dr. E. B. TYLOR read the following paper in the absence of the Author:—

NOTES on AUSTRALIAN MESSAGE STICKS and MESSENGERS.

By A. W. HOWITT, F.G.S., Corresponding Member  
Anthrop. Inst. of Great Britain.

[WITH PLATE XIV.]

It has been long known that the Australian Aborigines make use of pieces of wood marked in various ways in order to convey information from one to another. It has been stated even in Australia that these so-called "Message sticks" can be read and understood by the person to whom they are sent, without the marks upon them being explained by the bearer. I have even known it to be said that persons other than he to whom the message was addressed could read the marks much as with us an educated person can read the words inscribed in one of our letters. Indeed these message sticks are often spoken of as "Blackfellows' letters."

The subject is important in so far that a right understanding of the method by, and the manner in which the markings on the sticks are made to convey information, will be well calculated to afford some measure of the mental capacity and of the mental status of the persons using them.

In order to test the question thus raised, as for instance whether these message sticks do or do not convey information to those receiving them, apart from any explanatory message given by the bearer, I made such personal investigations as I found possible, and I also addressed myself to numerous correspondents in various parts of Australia. My best thanks are due to a number of them who kindly responded to my enquiries and whose information I have recorded in these notes.

Unfortunately for the more complete success of my investigations it happens that the Kurnai of Gippsland, to which I have the readiest access, are a tribe which did not use message sticks excepting in their most rudimentary form, and therefore I could not with them put the matter to such test as would otherwise have been possible.

These notes were at first intended to refer only to the subject of message sticks, but I soon found it necessary to say something about the messengers themselves, as well as of what may be called the emblematic tokens which in some tribes they also carry together with the message stick or without it.

Such emblematic tokens are for instance the sacred humming instrument used in the initiation ceremonies, which is conveniently spoken of by its English name of Bull-roarer; the man's kilt which is carried on the point of a spear when the message calls an assemblage for war, and the lumps of pipeclay or red ochre which some messengers of death or of festivity also carry are likewise emblematic tokens.

I have, however, only touched upon these subjects because their full consideration would lead me far beyond the scope of this paper, which is intended to deal with message sticks especially.

The use of message sticks is not universal in Australian tribes, and the degree of perfection reached in conveying information by them differs much. Some tribes such as the Diëri do not use the message stick at all, but make use of emblematical tokens such as the net carried by the Pinya, an armed party detailed by the council of head men of the tribe to execute its sentences upon offenders. Other tribes such as the Kurnai use pieces of wood without any markings. Other tribes again, especially I think in Eastern Queensland, use message sticks extensively, which are often elaborately marked, highly ornamented and even brightly painted.

Taking Gippsland as a first example, it is to be noted that the Kurnai used the message stick in its most rudimentary form. For instance if a man desired to arrange with the men of another locality for a meeting at a certain time and place he might do as follows. I assume the message to be an invitation to meet for a corroboree at a place indicated by name to the messenger, that the time would be after an interval of "two moons" and that the persons to be invited lived in several distinct localities. The sender of the message in giving it to his messenger (Baiara) might, if he used anything to aid the memory, break off a number of short sticks from some tree or bush at hand equal in number to the localities to be visited, delivering them one by one to the messenger as he named the places. The same method would apply to the enumeration of individuals.

I have known the various stages to be made in travelling to be counted to a messenger by enumerating them on the fingers of one or both hands, and where these did not suffice by also using the toes in his count.

It is not necessary that the message be carried by any particular person, but in most cases the messenger would be one of the younger men related to the sender. If, however, the message related to the initiation ceremonies, the messenger would be one of the older men. Such a messenger would carry with him a Bull-roarer as a token. If the message related to a set-

fight,<sup>1</sup> the token might be a club or a shield, or if to gather a war party a man's kilt carried suspended from the point of one of the jag spears. This would be passed on from locality to locality until it had made its round.

The tribes nearest allied to the Kurnai were those to the westward of Gippsland, and of which the Woiworung of the Yarra River may be taken as an example. This tribe is now all but extinct—one survivor is the intelligent old bard whose songs Dr. Torrance has recorded,<sup>2</sup> and whom I have had before occasion to refer to as my authority for the customs of his people, of which he is a complete repository. In this tribe it was the headman of some locality who sent out messengers to collect people for festive occasions, for set-fights or for other matters concerning the tribe, and he did this after consulting with the other old men. The messenger was usually one of the younger men, and if possible one whose sister was married to some one in that part of the tribe to which the messenger was to go,<sup>3</sup> for under such circumstances a man could go and return in safety, being known to and protected by the people he visited.

Berak gave the following illustrations of the practice which I quote as nearly as possible in his own words: "Suppose being a Ngürüngéta (headman) I desired to call the people from all round to come to a corroboree and for ball playing,<sup>4</sup> I should, after I had talked with my friends, say to one of the young men, you go to such and such people and take this Kalk, and give it to the Ngürüngéta there and tell him this message. The man then going would hand my Kalk to the headman there and would give him my message, who would then show it to his men and repeat my message to them."

No messenger who was known to be such was ever injured, for people were always glad to receive news and messages. The message stick called Mungü-Kalk (1), or Barndana (2), was made

<sup>1</sup> I use the word "set-fight" for those expiations by spear-throwing or by club in which some offender was brought to punishment in the presence often of the whole tribe. See "Kamilaroi and Kurnai," p. 216.

<sup>2</sup> "Music of the Australian Aborigines," Journ. Anthropol. Inst., Vol. XVI, p. 335.

<sup>3</sup> Probably also a man married to a woman of that part, or a man the son of such a woman.

<sup>4</sup> This game of ball-playing was also practised among the Kurnai, the Wolgal, the Wotjoballuk as well as by the Woiworung, and was probably known to most tribes of south eastern Australia. The Kurnai made the ball from the scrotum of an "old man kargaroo," the Woiworung made it of tightly rolled up pieces of opossum skin. It was called by them "mangürt." In this tribe the two exogamous divisions, Bunjil and Waa played on opposite sides. The Wotjoballuk also played this game, with Krokitch on one side and Gamutch on the other. The mangürt was sent as a token of friendship from one to another.

by the sender and was kept by the recipient of the message as a reminder of what he had to do, as for instance, to meet the sender at a certain time and place, and to take certain persons with him. For friendly meetings for corroboree when there was no cause of quarrel existing, the messenger carried a man's kilt (Braujep) and a woman's apron (Kaiung) hung on a reed; for meetings to settle quarrels or grievances by a set-fight, or for hostile purposes generally, as for instance to combine for an attack upon some common enemy, the kilt was hung upon the point of a jag spear made of ironbark wood (3).

The place of meeting being named verbally in the message which the messenger "carried in his mouth" it might be necessary to indicate the precise time upon which the people should assemble. This could be done by counting the different stages or camps to be made on the journey, or the number of "Moons." If the number to be counted was large, recourse was had to various parts of the body, each of which had a recognized name, and an understood position in this method of enumeration. So many parts thus enumerated, counting from the little finger of one hand, meant so many stages, or days or months as the case might require.

- (1). *Bübüpi-müringya* = child of the hand. The little finger.
- (2). *Büláto-rável* = a little larger; the ring finger.
- (3). *Büláto* = larger; the middle finger.
- (4). *Urnüng-mélük* from *Urnüng* = a direction, and *Melük* = a grub found in the boles of some *Eucalypti*; the forefinger.
- (5). *Babüngyi-muringya* = mother of the hand; the thumb.
- (6). *Krauel* = the wrist.
- (7). *Ngürümbül* = a fork; the divergence of the radial tendons.
- (8). *Jerauabil* = the swelling of the radial muscles.
- (9). *Thámbür* = a round place; the inside of the elbow joint.
- (10). *Berbert* = the ringtail opossum; also the name of the armlet made of the pelt of that animal, hence used to designate that part of the arm where the armlet is worn; the biceps.
- (11). *Wüling* = the shoulder joint.
- (12). *Krakerap* = the bag place, or the place whence the bag hangs by its band, i.e., the collar bone.
- (13). *Gürnbert* = Reed necklace, the neck or the place where the necklace make of pieces of reed is worn.
- (14). *Kürnagor* = the point or end of a hill, or of a spur or ridge, hence the lobe of the ear.
- (15). *Ngárabül* = a range or the ridge of a hill, hence the side suture of the skull.
- (16). *Bündale* = the cutting place, i.e., the place where the

mourner cuts himself with some sharp instrument, from *bündaga* = to cut, e.g., *Büdagat kalk*, cut the wood or log. This is the top of the head.

From this place the count follows down the equivalent places on the other side, thus giving a considerable scope for enumeration.<sup>1</sup>

This method of counting fully disposes of any belief that the paucity of numerals in the languages of the Australian tribes arises from any inability to conceive of more numbers than two, three, or four.

My informant, Berak, made a message stick such as was formerly used by his tribespeople. It is represented in fig. 1, Plate XIV. His explanation of it was as follows:—

The notches on the upper right hand side of the stick represent the sender, and other old men who join with him in the message. Those on the under side represent the recipient and the old men with him. The remainder of the stick being notched along the whole length above and below means that all the men of both localities are to be present. The markings on the flat side at the right hand are merely ornamental, as are also the crescent-shaped ends of the stick. This message is supposed to be an invitation to some people at a distance to come to a corroboree.

The next example which I take is that of the Wotjoballuk, of the Wimmera River in Victoria. The particulars are obtained by enquiry from old men of that tribe.

Messages were sent by the old men by messengers whom they instructed, and to whom message sticks were given. Having consulted together, and having arrived at a determination, as for instance that some other part of the tribe should be summoned to meet with their part of it on some festive occasion, or for some other purpose, the principal man among them prepares a message stick by making certain notches upon it with a knife. In old times the marks were made with a mussel shell (*unio*). The man who is to be charged with the message looks on while the headman makes the message stick (*galk*), and he thus learns the connection between the marks upon the stick and his message. A notch is made at one end to indicate the sender, and probably notches also for those who join him in sending the message. A large notch is made on one edge for each tribal group which is invited

<sup>1</sup> I note the following as to messengers in tribes to the south west of the Woiworing as given by Buckley (Morgan, "Life of Buckley," McDougal, Hobart Town, 1852).

"A messenger came from another tribe saying we were to meet them some miles off. Their method of describing time is by signs on the fingers, one man of each party marking his days by chalking on the arm and then rubbing one off as each day passes," p. 35. See also similar statements, pp. 49 and 61.

to attend. If all the people are invited to attend, the stick is notched on the edge from end to end. If part only are invited, then a portion only of the stick is notched. If very few are invited to meet, or referred to in the verbal message, then a notch is made for each individual as he is named to the messenger.

The oldest man (Headman) having made such a message stick hands it to the old man nearest to him, who inspects it and, if necessary, adds further marks and gives corresponding instructions. Finally, the stick having passed from one to other of the old men present is handed to the messenger, who has received his verbal message in connection with it. If any duration of time is connected with the message, or if an enumeration of stages or camps is made, a method is used which is almost identical with that which I have given in speaking of the Woiworung. Its occurrence in these tribes suggests that it must have been general over a considerable part of Victoria.

Commencing at the little finger the enumeration is made as follows:—

- (1.) *Giti-mūnya* = little hand = little finger.
- (2.) *Gaiṭp-mūnya*, from *gaiup* = one, and *munya* = hand; the ring finger.
- (3.) *Marūng-mūnya*, from *marung* = the desert pine (*Callitris verrucosa*). This has reference to the middle finger being longer than the others, as the desert pine is taller than the other trees growing in the Wotjo country.
- (4.) *Yolop-yolop-munya*, from *yolop*, to point or aim. Thus *yolop-būk* is the act of aiming a spear. The forefinger.
- (5.) *Bap-munya*, from *Bap* = mother.
- (6.) *Dart-gūr*, from *dart* = a hollow, and *gur* = the forearm; this refers to the hollow formed by the inside of the elbow joint.
- (7.) *Boibūn* = a small swelling. This refers to the swelling of the flexor muscles of the forearm.
- (8.) *Bun-darti* = a hollow, referring to the hollow of the inside of the elbow joint.
- (9.) *Gengen-dartchūk*, from *gengen* = to tie, and *dartchūk* = the upper arm. This name is given also to the armlet of opossum pelt which is worn round the upper arm, hence applied to the biceps muscle.
- (10.) *Borporūng*, the point of the shoulder.
- (11.) *Jarak-gourn*, from *jarak* = reed, and *gourn* = neck, that is, the place where the reed necklace is worn.
- (12.) *Nerūp-wrembūl*, from *nerūp* = the butt or base of anything, as *nerup-galk*, the butt of a tree at the ground. Hence applied to the lobe of the ear (*wrembul*).

(13.) *Würt-wrembul*, from *würt* = above and also behind, and *wrembul* = ear. That is, that part of the head which is just above and behind the ear.

(14.) *Doke-doke*, from *doka* = to move.

(15.) *Det det* = hard. This refers to the crown of the head; from here the count is carried down the corresponding parts on the opposite side.

The messenger carried the message stick in a net bag, and on arriving at the camp to which he was sent, he handed it to the headman at some place apart from the others, saying to him, "So and so sends you this," and he then gives his message, referring as he does so to the marks on the message stick; and if his message requires it, also enumerates the days or stages as the case may be by the above method. The headman having examined the message stick hands it to the other old men, and having satisfied himself how many people are wanted and how many hordes<sup>1</sup> are to be present, and having made such other enquiries as may be necessary, calls all the people together and announces the message to them.

The message stick is retained by the recipient, who carries it back when he goes to attend the meeting it calls together. The messenger meanwhile lives in the camp with some of his connections or friends until they all depart, when he accompanies them. Such a messenger would never be interfered with. No one would think of injuring a man who brought news. If any one were to molest him the whole of the people would take the matter up, but especially his own friends.

The messenger in this tribe did not carry any emblematical token in addition to the message stick, even when carrying a message relating to a set-fight or to war, but a messenger of death painted his face with pipeclay when he set out.

The illustration, fig. 8, Plate XIV, represents one of the message sticks used in this tribe. It conveys a message from the headman of the Gromillük horde, to the people of the Yarik-külük horde at Lake Coorong, both being local divisions of the Wotjobalük tribe. The message invited all the people to come to a corroboree.

The notches at (a) represent the sender and his four friends, being the principal men at Gromilluk. The notches at (b) represent the Yari-kuluk people. The notches continuing along the edge to the end on each edge indicates that all the people are to come. The shape of the stick is due to it having

<sup>1</sup> Horde is used to designate one of the local divisions of a tribe which counts descent through the female line. I only use the word clan for the local divisions of a tribe which has descent in the male line.

been made from a crooked branch of a tree, and is not intentional.

The next tribe to be mentioned is the Wirajuri of the Lower Murumbidgee River in New South Wales. This tribe has the Kamilaroi organization into four classes, with descent in the female line. Each class has a group of totems. In each locality the oldest man of any totem is the head of the totem there, and the oldest man of any totem is the head of that totem as a whole. Important messages, such as those relating to the initiation ceremonies (*Bürpäng*) are sent by a headman. The messenger must be of the same totem as the sender, and the message is sent to the oldest man of the same totem in the locality to which the message is sent. This oldest man is the head of the totem there. Thus, supposing the headman sending the message to be a Kubi, his messenger is a Kubi, as is also the man to whom the message is sent. The message is sent on from one place to the other by men of the same totem.

On such a mission the bearer of the message is safe from harm. He is provided with a stick, the notches on which remind him of his message. If the message is one calling the people together for initiation ceremonies, the messenger carries also a bull-roarer (*Bolū*, or *Mudjigang*), a man's belt (*Gūlir*), a man's kilt; *Būran*, or *Talabūlga*) made of kangaroo rat skin; a head-string (*Ulūngai-ir*); and a white head-band (*Kambrūm*). That is to say, in addition to the message stick the messenger carries the sacred emblem which compels the attendance at the ceremonies of those to whom it comes, and also the various articles with which the novice is invested when he is "made a man."

The messenger having made known his errand to the man to whom he has been sent, and delivered his message stick and the other tokens of his message, the recipient assembles the men at the council place (*Ngūlūbūl*). He there shows them the message stick and the tokens, and delivers to them the message.

Sometimes, when a kilt is sent, the strips of skin forming it are used instead of a notched stick to remind the bearer of his message.

The recipient of the message sends it on with all the articles he has received by one of his own people, and it thus travels until the furthest point is reached.

The tribes which inhabited the Maneroo tableland and the south coast of New South Wales also used message sticks much as did those I have mentioned. The messenger, as in other places was usually a young man related to the man who sent the message, and he was chosen, if possible, as having relations or friends at the place he was sent to.<sup>1</sup> If the message related to

<sup>1</sup> The man who acted as messenger between me and the Murring people about the holding of their initiation ceremonies was one of the Krauatun clan of the

a meeting for corroboree he carried a kilt (*Būran*), a head-band (*Ngūnūmla*), and a nose peg (*Elūngantū*). If the message related to a set-fight he carried a shield (*Birkūmba*), and if the message was to call together a war party he carried a jagspear (*Jerumbūdi*). In relation to the initiation ceremonies he carried a bull-roarer (*Mūdji*), and also a spear, boomerang, and shield.

The following account given to me by Mr. A. M'Reachie, of Delegete, will show how these messages were sent in the early days when Maneroo had not been long settled by the whites, and while the aboriginal tribes were still in the primitive condition.

When travelling, in 1840, on the Upper Snowy River, he met two young men, one of whom carried two sticks, each about two feet in length, and having notches cut on them. These, they told him, were to remind them of their message, which was to the Maneroo blackfellows, asking them to meet those of the Tumut River and Queenbeyan in the Snowy Mountains, at the sources of the Snowy River, for the purpose of feasting on the Bogong moths.

I have now recorded these particulars which are known to me about tribes with which I have personal acquaintance, and I proceed to note information for which I have to thank correspondents scattered over a wide extent of Australia.

The practice of the Kamilaroi tribes is indicated by the statements of Mr. C. Naseby,<sup>2</sup> of Maitland, whose knowledge of the tribes in that district extends over fifty years. These new messengers in each clan,<sup>3</sup> who were like heralds, and as such were well known, could safely go among neighbouring tribes even when there was war. These men, being well known, needed not to carry any emblems, but if a man was employed by a white man as a messenger, he carried the letter entrusted to him in a cleft stick, and he could then pass safely through even an enemy's country, because he was seen to be the "white man's messenger," and that, therefore, if any harm happened to him, the "tribe of the white man would become very angry."

Mr. Cyrus E. Doyle, writing to me of the Kamilaroi blacks of the Gwydir River, says that the old men of the tribe formed a council which managed all matters of importance. It was they who sent messengers to distant places. Message sticks were

Kurnai. He had married a Maneroo woman and his mother had come from the same district. He was therefore free of that tribe (Wolgal) and he was the recognised means of communication between his tribe and his wife's. He spent his time between the two.

<sup>2</sup> For Mr. Naseby's valuable information I have to thank also Mr. J. Fraser, B.A., of Maitland, who kindly placed us in communication.

<sup>3</sup> Mr. Naseby's context shows me that he uses the word clan for a local subdivision of a tribe and not for one of the social divisions.

used, but only had notches cut on the edges by the sender to show the number of men required to meet together, or to help the sender's people against their enemies.

Messages of less moment were intrusted to the messengers to deliver verbally.

In the Yualaroi tribe on the Ballone River, in New South Wales, according to Mr. Robert Crowthers, "men not specially appointed can carry pieces of wood with marks on them from one person to another, but they have to explain their meaning as the marks alone go for nothing."

Still further to the northward, in the Bunya-Bunya Mountains, is the Kaiabara tribe, which divides into four exogamous intermarrying classes of the Kamilaroi type, but with descent in the male line. Here also message sticks are used, and according to my informant, Mr. Jocelyn Burke, sub-inspector of native mounted police, when the message relates to combats between the Kaiabara and neighbouring tribes, which are to be arranged in consequence of some man's offence, as the abduction of a woman, the challenge is sent by a messenger, who carries a piece of wood cut in the form of a boomerang, with a shell tied at one end. If the other tribe keeps the stick and the shell, the challenge is accepted, and they send back word by the messenger naming the place and time for the meeting; but if they consider themselves not strong enough and are afraid, they keep the shell and send back the stick. This means that they decline the challenge. They have to break the shell on a stone in the presence of the messenger as a sign that they acknowledge themselves to be beaten.

On the coast of Southern Queensland there was formerly a considerable tribe, which has now almost perished. It was called the Chepara. It was divided into a number of local clans, but had so far as the most careful enquiries by my correspondent, Mr. James Gibson, J.P., of Yatala, could discover, no class divisions or totems. There are, however, indications that these once existed.

In this tribe messengers were sent on tribal matters by the principal headman of the clan, or in matters of great and general moment by the principal headman of the tribe. The messenger (*Būira*) has usually a son or a near relation of the sender, such as his "Kanil."<sup>1</sup>

If the message was an important one from the headman of the tribe, the messenger carried with him a message stick called "*Kabūgabūl-bagerū*." The marks on this stick are said to have

<sup>1</sup> Kanil is a sister's son's son, or a sister's daughter's son. Here we have lingering traces of descent through the female line in the choice of a messenger.

been always the same, and to have been known to mean that the recipients of the message were to pack up and start for the appointed camp. The stick itself conveys the message, but the bearer of it also carried a communication by word of mouth. The messenger on his arrival delivered the stick to the headman of the clan to which he was sent, which was the one nearest to his own. This man then sent it on by his own messenger, and so on until it finally returned to the first sender.

This message stick was sent on all occasions when the whole tribe was to assemble for corroborees, fights, or for the Bora ceremonies. The messenger was painted and decked with feathers, and when the message referred to the Bora, he carried also in addition to the Kabūgabūl-bagerū, a bull-roarer (*Bribūn*) and a spear, to the point of which was attached a bag containing quartz crystals, which might only be shown to the various headmen. It was not lawful for a woman to see the Kabūgabūl-bagerū, and if she saw the Bribūn she was liable to be killed.

Along the coast to the northwards of the Chepara was the Turribul tribe. Mr. Harry Aldridge, of Maryborough, has kindly given me the following important information as to the use of message sticks by that and the neighbouring tribes. Mr. Aldridge has had great experience, having lived in the Turribul country almost since its first settlement, and has not only frequently observed the use of message sticks, but has also used them himself in communicating with the blacks. He tells me that the maker of a message stick makes it in the presence of his messenger, and explains it to him. If the messenger cannot deliver it himself, he in his turn explains it to some other messenger, who undertakes to deliver it. If shown to a man to whom it has not been explained, he will say, for instance, "I know this means something, but I do not know what it means."

As an illustration of this means of sending a message, Mr. Aldridge sketched a message stick and gave the following particulars. The sketch has been reproduced in fig. 17, Plate XIV.

He said, "I assume that I am a black fellow living at some place distant twenty to thirty miles from some friend to whom I desire to send the following message—'I am here five camps distance from you. In such and such a time (say ten days), I will go and see you. There are so and so (naming them) camped here with me. Send me some flour, tea, sugar, and tobacco. How are Bulkoin and his wife, and Bunda.' Having my messenger by me, I should then prepare a message stick, say a piece of wood, six inches long, half an inch wide, and on it I should make the following marks shown in the sketch.

"(a). Five notches representing the five stages (camp) distant from the recipient of the message.

"(b). A flat place cut in the edge to show a break in the message.

"(c). Ten notches representing the time in days after which the sender will visit his friend.

"(d). Eight notches representing the eight people camped with the sender.

"(e). Four notches representing the articles asked for.

"(f). A flat place representing another break in the message.

"(g). Three notches representing the three people asked after.

"Having made these marks and explained them to my messenger, I should carve the end of the stick to make it ornamental, and then give it to him for delivery."

In fig. 13, Plate XIV, there is represented a message stick used by the Mündainbūra tribe at the Dawson River, in Queensland. This tribe divides into four classes, Kūrgila, Kūnbe, Wūngū and Kūbūrū, having female descent.

My correspondent Mr. W. Logan, of Durham Downs, says of this stick as follows: "the notches in the upper edge<sup>1</sup> represent a number of men of the Kūrgila class of the tribe. The two rows of dots below represent men respectively of the Kūnbe and Wungu classes. The notches on the lower edge represent men of the Kūbūru class. The message with it was to invite these people to a corroboree."

In writing to a valued correspondent, Mr. R. Christison, of Lammermoor Station, on the subject of message sticks, I submitted to him a sketch of the Mundainbura message sticks with a request that he would ascertain what the men living with him of the Dalebūra tribe could make of it; the Dalebura tribe has the same class divisions as those above noted.

In reply he wrote as follows: "I return the message you sent in your letter and I will explain all the blacks here can make of it. The top notches represent the Karagilla class; the bottom ones represent the Kooberoo class and the dots represent a wish to meet."

This statement is important as showing that the notches in the upper and lower edges have a definite meaning as the Kurgilla and Kuburu classes respectively.

On the coast north of Rockhampton is the Kūinmūrbūra tribe, which has a class organization on the Kamilaroi type, with descent in the female line. Mr. W. H. Flowers, of Pine Mountain, says as follows: "Meetings for Boras (Initiations) are called by means of message sticks. One lately sent here from the blacks to the westward was from the Bau totem (Black Eaglehawk) of the tribe to the Merkein totem (Laughing

<sup>1</sup> Represented on the left side in the figure.

Jackass) of this tribe, was a piece of rosewood about five inches by one and a half inches, and one-sixth inch thick."

I may add to this that both the Bau and the Merkein totem are of the same primary class Witterū although occurring in different tribes.

At the Belyando River somewhat further north is the Wakelbura tribe which may serve as the type of a number extending over a large extent of country and as to which I have received many interesting particulars from a most competent observer, Mr. J. C. Muirhead, of Elgin Downs.

From his account I extract the following: A messenger is chosen who has a number of friends in the tribe to which he is to be sent or which he is instructed to bring. Should such a messenger be killed or injured, his tribe would retaliate by killing or injuring the man who did it. Message sticks are used to send messages by such messengers.

The following instance will show how message sticks are used in this tribe, figs. 15 and 16, Plate XIV, represent one which was sent by one of the Wakelbura, to a member of the Yangebura tribe at Blackall. The stick being sent by an Obū is Gidyea,<sup>1</sup> timber being *Wūtherū*. The message refers to game, (a) being for Emu, (b) for Wallaby, to be found near a certain wire netting fence, (c) on a station near Clermont. The marks on the stick do not convey their meaning without a verbal message. The man who takes the stick explains their meaning. If the stick were sent by a Mallera, everything marked on the stick would be Mallera, and it would be delivered to a Mallera. But the above described and figured stick was sent by Obū to Obū. The sticks are always painted, this one was coloured blue.

Here we have again a case analogous to the Wirajuri practice, the message goes through the same totem. But the principle involved is here much more comprehensive. The stick itself is of wood which is of the same totem as is also the game noted on it. In this tribe the two primary, and the four sub-classes divide, I may say, the whole universe into groups. The two primary classes are Mallera and Wuthera, therefore all objects are either one or the other. The practice is carried to such an extent that for instance a wizard who is Mallera can only use objects for his magical practices which are also of the same class as himself. Moreover when he dies the staging upon which his body is laid out must be made of the wood of some tree belonging to the Mallera class. Hence it is necessary as in the case just given, that when a man of the Obū sub-class sends a message stick it must be made of some wood which is also Obū.

<sup>1</sup> *Acacia homalophylla*.

I am indebted to Mr. E. Palmer, M.P., of Gamboola, for examples of message sticks used by the Kugobathi tribe, at the Mitchell River which flows into the Gulf of Carpentaria. The one given in figs. 6 and 7 of Plate XIV, represents the front and reverse of a message stick sent by a blackfellow at the Flinders River to another at the Mitchell River, to inform him that his wife was dead. The one shown by fig 5, Plate XIV, is a friendly reminder or greeting, carried without any message excepting the sender's name by Mr. Palmer from a man of the Maikulon tribe, to a man of the Maiapi tribe.

Unfortunately I have no descriptive statement of the message and the marks connected with it as shown by figs. 6 and 7.

These are examples of the more ornamented class message sticks which are used in some places.

In the country through which the Darling River flows in Western New South Wales the tribes also used the message stick extensively for conveying information from one to the other.

The following details have been kindly communicated to me by Mr. J. W. Boulton of Tarella.

Message sticks can be sent by anyone, even by a white man. The marks placed upon the sticks are aids to memory. Fig. 4, Plate XIV, represents a message stick sent by a Tongaranka blackfellow inviting two of his friends at a distance to come and see him as his wife was ill and could not travel. The notch (a) means the sender; (b) and (c) the two men invited. The stick was wrapped round with a piece of thread to render it less liable to be lost.

Figs. 2 and 3 represent the two sides of another stick belonging to a message sent from the son of the headman of the Tongaranka tribe to a man at Tarella. The message was to tell him that the sender and his two brothers, and also two old men were at a certain water hole, and wished him to bring down his son to be initiated (made a man), as there were two other boys ready for the same ceremony. The notches (a) (b) (c) in fig. 3 represent the sender and his two brothers; the notches (d) (e) represent the two old men. The notches in fig. 2 are as follows: (d) represents the recipient of the message; (c) is his son, and (a) and (b) the two boys ready to be initiated.

This message stick is made of part of the small branch of a tree, and is wrapped round with a few strands of the "man's kilt" with which article of man's attire a boy is invested after initiation. The whole is tied up by means of about two feet in length of the cord made of twisted opossum fur for which the novice wears for a time after his initiation, as evidence of being a "young man."

In this instance, the "emblematic tokens" are made part of the message, and are not, as in some tribes already referred to, carried separately by the messenger.

Yorke's Peninsula, in South Australia, was occupied by the Adjadura tribe.<sup>1</sup> My informant, Mr. T. M. Sutton, of Point Pearce Mission Station, has most obligingly made minute enquiries for me as to the use of message sticks by that tribe, the results of which I now propose to give shortly.

Meetings of head men of the clans, or of the clans, or of the whole tribe for festive or ceremonial purposes were called together by means of messengers who were told off for the duty by the headman of that division or clan which initiated the proceeding. These men carried message sticks. If a reply was required, the same or any other man carried it back, sometimes by message stick, sometimes by word of mouth only. There does not seem to have been any established rule as to the return message. The messenger carried the message stick (*Mank*) rolled up in the skin of any kind of animal. At the present time a handkerchief is used. The bearer on his arrival hands it to the person to whom it is sent.

Various kinds of message sticks are used, or rather message sticks bearing various marks. That for corroboree has its markings. If the meeting is for initiation a second stick is sent also with markings peculiar to it. The two sticks in such a case are rolled up together.

If the message relates to an expiatory fight the messenger on delivering his stick says, "*Dudla*," which means "fight."

The two above-mentioned kinds of sticks are shown in Plate XIV. The figs. 9 and 10 represent the two sides of a corroboree stick.

In fig. 9 (*a*) represents the sender; the notches at (*b*) represents the singers; and at (*c*) the women, that is to say the women who perform the part of orchestra by drumming on their rolled up skin rugs; the other notches represent the men who will be present as dancers. In fig. 10 (*a*) represents the old men who are invited; (*b*) the women to accompany them, and (*c*) the men.

Figs. 11 and 12 represent the two sides of the initiation stick.

<sup>1</sup> I take this opportunity of correcting some inaccuracies in an account of this tribe which I gave on information furnished by the Rev. Julius Kühn, at p. 284, Appendix H, "Kamilaroi and Kurnai." The tribal name is that above given. It seems that the local and social divisions of the tribe are coincident. There were four of each. The social divisions (classes) are Kari = Emu, Wani = Red Kangaroo, Wilthutha = Shark and Wiltu = Eaglehawk. Each class had a group of totems. The classes were not exogamous. Thus Kari might marry Kari as well as any other class. The children took the class name of their father. The only restriction upon marriage depended upon nearness of kinship.

In fig. 11 (*a*) is a large notch representing the sender of the message, the headman of the tribe; the two small notches alongside are two of the old men who will assist him in seeing that everything is conducted properly. The notches at (*b*) represent all the men of his moiety of the tribe who will assist at the ceremony. The five notches at (*c*) represent the boys who will be initiated, and the pairs of notches at (*d*) the five couples of men who are assigned to look after the five boys.<sup>1</sup> Fig. 12 represents the men of the other moiety of the tribe who are invited to assist; (*a*) representing the two old men of that moiety.

It seems from Mr. Sutton's statements that among the Adjadura there is an approach to a fixed rule according to which these sticks are marked. For the persons who send them, the persons who receive them and the matters to which they relate are pretty much always the same. The variations between one set of sticks and another would be in the relative number of the sets of individuals referred to. The names of the persons and the times and places referred to in the message would of course never appear upon the record of the message stick. Thus one can understand that such a stick could convey a certain amount of meaning definitely to an Adjadura headman independently of any verbal message.

Mr. Sutton says that the recipient of a message stick without a verbal message, must have some knowledge of what is wanted or of the subject to which it relates in order to explain it. As an illustration he said that he had once carried a message stick for one of the Adjadura which was merely a flat piece of wood with one notch at one end and two notches close together at the other. He delivered it without saying more than "This is from so-and-so," not having received any message with it. The recipient, however, knew that the sender had been separated from his wife, and he understood the marks on the stick to mean that the two had been reconciled again, and thus correctly read the message which was intended to be conveyed.

I have spoken of the emblematical tokens which some messengers carry. I may now add to those referred to an instance

<sup>1</sup> One of these two men is the boy's "father's brother," own or trihal. If there is no such person then the "mother's brother" is chosen own or trihal. In default of him some one nearly related is selected to act.

Here we have apparent the influence of descent counted through the father with a recourse in emergency to the female line. In most tribes, *e.g.*, the coast Murring, the two men who look after the novice would be of the opposite moiety of the tribe to which he belongs. The men of one moiety initiate the boys of the other. That is to say that moiety which has to provide wives for the men of the other moiety have the right of saying when those youths shall be permitted to exercise the privileges of manhood.

from a tribe on the northern shores of Australia, which combines the features of both the message stick and the token.

Mr. E. O. Robinson, of Coburg Peninsula, wrote to me to the following effect. The tribe there is known by two names, Oirig and Mananelo. In fact, however, these names are the designations of the two divisions of the tribe, and as it seems the local divisions and not class divisions, such as are found elsewhere. Information is conveyed by means of sticks' about eighteen inches in length, and one-third of an inch in diameter. Such a stick is not carved or marked, but a bunch of feathers like a plume is tied on one end.

A stick dressed with white feathers is a token of peace and a call to a friendly meeting or a corroboree. The sender is usually the head of a family. There is not any rule as to sending such a message by any particular person. Any one can carry it, even a woman. If the recipient of the stick accepts the invitation, he keeps it, and the time of meeting is arranged. If he is not inclined to be friendly, he breaks the stick, or he pulls off the feathers and replaces them with coloured ones and sends it back. This means war.

Mr. Robinson gave the following illustration:—

In 1879, when on his return from Port Darwin, he found two such sticks dressed with coloured feathers in his camp at Croker Island. Shortly before this his partner had been killed by the blacks. Mr. Robinson's two blackboys at first thought that the sticks were to tell them that some black fellow was dead. But on further examination of them, they said, "Black fellow not dead—only gone."

It turned out afterwards that the news intended to be conveyed was, that one black fellow had died, one had been killed by Mr. Robinson's partner, and a woman had been killed by some other blacks. The sticks had been left, where found, to tell his two men of these deaths.

I have now detailed the evidence, which I have before me, bearing upon message sticks, and upon the manner and degree in which the markings upon them are designed to convey information to the persons receiving them. Very much more evidence might be collected. My evidence, although collected from places spread over a large part of Eastern Australia, leaves vast areas untouched, and does not at all show what the practice is in the western half of the continent. Yet I venture to think that the facts which I have recorded in these notes, will enable anthropologists to arrive at a fair degree of certainty as to the general practice, and also as to how far a message stick can be used to carry information from one person to another.

It seems to me that so far as the evidence goes, it may be

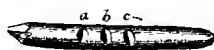




*fig 1*



*fig 2*



*fig 4*



*fig 3*



*fig 5*



*fig 6*



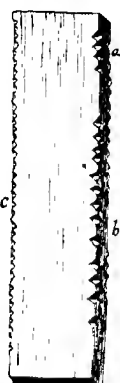
*fig 7*



*fig 8*



*fig 9*



*fig 10*



*fig 11*



*fig 12*



*fig 13*



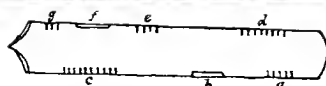
*fig 14*



*fig 15*



*fig 16*



*fig 17*

*Alf. Robinson, del.*

concluded with some degree of safety, that there is no recognised system of marks which serves to convey information without an accompanying verbal message. The stick with its markings is a kind of tally to keep record of the various points or heads of the message, and is merely an *aide mémoire*. There is no reason to believe that any of the markings are anything but arbitrary, and many of these shown in the illustrations are merely ornamental.

But when persons have been in frequent communication with each other by means of message sticks, and are acquainted generally with each other's concerns, it is quite possible for one of them through familiarity with the system usually followed by his correspondent, to give a guess with more or less certainty at the probable meaning of any marked stick sent to him. Thus, for instance, the partial reading by the Dalebura men of the Mundainbura message stick, the statement by the Chepara that their Kabugal-bageru sticks were always marked in the same manner, and the definite arrangement of the marks on the two message sticks of the Adjadura, lead to the belief that there is a tendency for the markings to acquire a definite position in certain kinds of message sticks, and, therefore, also a definite meaning.

If this is so, we have in this what seems to be a first step towards the ultimate result of a system of writing, where symbols might bear some resemblance to the original notches made upon the message stick.

#### *Description of Plate XIV.*

- Fig. 1. Message stick of Woiworung tribe, Victoria, to collect an assembly for corroboree. The reverse is plain. Scale one-half linear.
- Figs. 2 and 3. Message stick of Tongaranka tribe, New South Wales, relating to initiation ceremonies. Fig. 3 (a), (b), (c), the sender of the message and his two brothers; (d), (e), two old men with the sender.
- Fig. 2. Reverse of fig. 3. (a), the recipient of the message (c), the son of (d), (a), (b), two boys to be initiated with (c). Half scale.
- Fig. 4. Message stick from a man of the Tongaranka tribe, (a) the sender of the message, (b), (c) the two men initiated by (a) to meet him.
- Fig. 5. Message stick sent by a man of the Maikulon tribe, to a man of the Maiapi tribe in Northern Queensland, as a friendly reminder. Half scale.
- Figs. 6 and 7. Message stick sent by a man at the Flinders

- River in North Queensland, to a friend at the Mitchell River to inform him that his wife was ill. Half scale.
- Fig. 8. Message stick of the Wotjoballuk tribe, Victoria, sent to invite an assembly for corroboree; (a) the sender of the message and four friends, (c) the recipient. The other notches indicate that all the people with (b) are to attend. Half scale.
- Figs. 9 and 10. Message stick for corroboree of the Adjadura tribe in South Australia. Fig. 9 (a) the sender of message, (b) the singers, (c) women; other notches the dancers. Fig. 10 (a) the old men invited, (b) women and, (c) the men with (a). One-fourth scale.
- Figs. 11 and 12. Message stick for initiation of the Adjadura tribe. Fig. 11 (a) sender of the message and the friends, (b) all the men with (a), (c) five boys to be initiated, (d) ten men to look after (c) during the ceremonies. Fig. 12 (a) the two old men who are invited. The remainder of the notches represent the men with (a). One-fourth scale.
- Fig. 13. Message stick of the Mundainbura tribe, Queensland, inviting to a corroboree. Upper line of notches represent men of the Kurgila clan, upper line of dots, men of the Kunbe clan, lower line of dots, men of the Wungu clan, and the lower line of notches men of the Kuburu clan. One-fourth scale.
- Fig. 14. Message stick of the Chepara tribe, Queensland, calling upon that part of the tribe which received it to attend for corroboree, or for initiation ceremonies. One-fourth scale.
- Figs. 15 and 16. Message stick from a man of the Wakelbura tribe, to a man of the Yangebura tribe, Queensland, inviting him to visit the sender to hunt for game near a certain wire netting fence erected on a sheep run, (a) Emu, (b) Wallaby, (c) the wire netting fence. One-fourth scale.
- Fig. 17. Message stick as used by the Turribul tribe in Queensland, representing a message from one man to another, (a) the distance of the sender from recipient of the message in stages (camps), (b) a break in the message, (c) the persons camped with (a), (d) period in days after which the sender will visit the recipient, (e) four articles which the sender requests may be sent to him, (f) a break in the message, (g) persons with the recipient after whom the sender enquires. One-fourth scale.

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Dr. J. G. GARSON exhibited and described a new form of anthropometric apparatus specially designed for the use of travellers. The description will appear in a future number.

JANUARY 8TH, 1889.

FRANCIS GALTON, Esq., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From the AUTHOR.—The Language of Palæolithic Man. By Daniel G. Brinton, M.D.

— Description of Exhibit made by the Department of Prehistoric Anthropology in the National Museum at the Ohio Valley and Central States Exposition in Cincinnati, Ohio, 1888. By Thomas Wilson, Honorary Curator.

— Megalithic Monuments of Brittany. By Thomas Wilson.

— Les Silex de Bréouio. By M. Thomas Wilson.

From DAVID MACRITCHIE, Esq.—Journal of the Gypsy Lore Society. Vol. i. No. 3.

From Professor AGASSIZ.—Annual Report of the Curator of the Museum of Comparative Zoology at Harvard College, to the President and Fellows of Harvard College, for 1887-88.

From the AUTHOR.—Burial Mounds of the Northern Section of the United States. By Cyrus Thomas.

— Pictography and Shamanistic Rites of the Ojibwa. By W. J. Hoffman, M.D.

— Folk-lore of the Pennsylvania Germans. By W. J. Hoffman, M.D.

— Paleoeethnologia Portugueza. Les Ages Préhistoriques de l'Espagne et du Portugal de M. Émile Cartailhac. Por Ricardo Severo.

From the SCOTTISH GEOGRAPHICAL SOCIETY.—The Scottish Geographical Magazine. Vol. v. No. 1.

From the ANTHROPOLOGICAL SOCIETY OF WASHINGTON.—The American Anthropologist. Vol. i. No. 4.

From the SECRETARY OF THE COMMONWEALTH OF MASSACHUSETTS.—Forty-sixth Report to the Legislature of Massachusetts relating to the Registry and return of Births, Marriages, and Deaths in the Commonwealth, for the year ending December 31st, 1887.

From the ACADEMY.—Rocznik Zarządu Akademii Umiejętności w Krakowie. Rok 1887.

— Zbiór Wiadomości do Antropologii Krajowej wydawany staraniem Komisji Antropologicznej Akademii Umiejętności w Krakowie. Tom. xii.

- From the SOCIETY.—Proceedings of the Royal Society. No. 272.  
 — Journal and Proceedings of the Royal Society of New South Wales. Vol. xxii. Part I.  
 — Journal of the Society of Arts. Nos. 1882–1885.  
 — Proceedings of the Royal Geographical Society. Vol. xi. No. 1.  
 — Bulletin de la Société Impériale des Naturalistes de Moscou. 1888. No. 3.  
 From the SOCIETY.—Bulletin de la Société de Borda, Dax. 1888. No. 4.  
 — Mittheilungen der Anthropologischen Gesellschaft in Wien. xviii Band. Heft 4.  
 From the EDITOR.—The Journal of Mental Science. No. 112.  
 — Bullettino di Paletnologia Italiana. Tomo iv. N. 9 e 10.  
 — Nature. Nos. 998–1001.  
 — The Photographic Times. Nos. 376–379.  
 — Science. Nos. 304–308.  
 — Revue Scientifique. Tome xlii. Nos. 24–26.

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The following paper was read by the Author:—

*The DISTRIBUTION and DENSITY of the OLD BRITISH POPULATION OF HAMPSHIRE.*

By T. W. SHORE, F.G.S., F.C.S.

[WITH PLATES XV AND XVI.]

THE subject I wish to bring before you is this: Have we any means still remaining in such a county as Hampshire of estimating approximately the distribution and density of the population which preceded the Roman invasion?

I think we may assume that the number of inhabitants any area of England supported in British time must have depended mainly on the food supply, so that if we could show that one area naturally produced more food than another of equal extent, we might reasonably conclude that the former would attract to it a larger population than the latter. It appears to me extremely probable that the shores of Southampton Water with its sheltered situation, its unique double tides, its abundant fish supply and the rich land along the courses of its tributary streams, must have attracted a relatively large population from the time of the earliest settlements of man in Britain. There are remains still existing and indications which are brought to light from time to time, which show that a very considerable pre-Roman population did live near these shores. We know that the gravel terraces along its banks and those of its tributary streams were their usual habitable sites, and there are earthworks of British date and

traces of others remaining at no great distance from this estuary. It is however mainly on the earthworks, and not on the food supply alone of any favoured area, that I wish to ground my argument.

We have in Hampshire about forty British earthworks remaining in a more or less complete state of preservation. That others formerly existed in this county is certain from the partial traces which still remain of them in historical references, in place names supported by circumstantial evidence, or in field evidence.

These earthworks of Hampshire are of various kinds and shapes, and where they inclose areas and form the so-called camps they are of widely different dimensions. Most of them are hill fortresses, either found on the tops of considerable hills or on rising ground conveniently near to the districts which they were, as I think, intended to protect. We have also marsh fortresses and peninsular fortresses, and in the New Forest one if not more examples of insular refuges, where as a defence for one or more small communities, mounds partly artificial, exist in bogs. In one case such a mound exists in what was formerly a small lake, and which might easily be re-converted into a lake at the present time.

The surroundings of the Hampshire earthworks at the present time, help us to form an opinion as to the purposes they were intended to serve. The forests which existed near them, have for the most part passed away, but the variations in hill and dale which we see now, are the same, and the geological conditions connected with the dry-chalk hills, or with the chalk streams, and the alluvial meadow land through which they flow are the same as in prehistoric time. As we stand within the area of any one of these intrenched inclosures, and consider the probable purposes it was intended to serve, the natural features of the country in which it was placed, and the geological circumstances connected with these surroundings, will be found to be very important considerations. I have endeavoured to discover the purposes for which the Hampshire earthworks were constructed, by a careful study of these considerations. These camps could scarcely have been permanently inhabited sites, for very few traces of dwellings or articles of common domestic use such as have been found abundantly elsewhere in the county, have been found within them. They could not have been constructed by passing bodies of armed men, for the labour involved, would have been far too great for a passing shelter.

There is but one other object, as far as I can see, for which they could have been constructed, that is as strongholds of defence or places of refuge in case of attack, for the people who lived near them.

If this was the purpose of their construction, then I think these entrenched areas must have had a distinct reference to the number of people required for their defence, and to the population, and their capital, or head of cattle they were intended to shelter. We can scarcely imagine that any British or other community, whether what we understand by a village community, or an aggregation of such communities, would construct a defensive earthwork such as one of these camps, larger than their requirements for shelter, or larger than their power of defence. Otherwise such a large camp would be a source of weakness to the people attacked, instead of a tower of strength. If these considerations are allowed, then I think we may draw some fairly correct inferences concerning the relative, and perhaps concerning the absolute density of the old British population, within reach of these strongholds, from the positions of the camps, the extent of their intrenchments, and the areas of their inclosures.

The largest Hampshire camps are placed where large open areas must have existed, and the smallest of them are in situations from which we can see even at the present day, they could have had no great clearings near them, and documentary evidence concerning the extent of the ancient forests confirms this. The smallest of the earthworks are but forest forts, while the largest are on some of the highest positions of the chalk hills, with extensive areas of down land and meadow land, generally alluvial meadow land, near them.

The consideration of the water supply for such intrenched hill fortresses as exist on the higher parts of the chalk downs, is one which is important, and may help in determining their uses. I have met with no remains of permanent buildings such as exist at Old Sarum, within any Hampshire intrenchment except at Merdon which was used as a Norman fortress, and only in two of the smallest of these camps in addition to Merdon, viz., those at Ashley, and at Woodgarston, have I met with wells within the inclosed areas.

All the remaining camps that can be described as hill fortresses, either have at the present time dew ponds, or cloud ponds as they are sometimes called within or near them, or have remains which show the probable former existence of such ponds.

Most of our high ground in Hampshire is capped with Tertiary debris resting on chalk, commonly consisting of clay with flints, so that there being usually plenty of clay, such ponds might easily have been formed. Our system of water supply on the highest parts of the chalk downs of Hampshire at the present day, is by dew ponds. The dew ponds within or near several of the larger Hampshire camps at the present time, are sufficient for

the water supply of some hundreds of sheep, even in the heat of summer. Many of these dew ponds have never been known to be dry. There is no reason to suppose therefore that a temporary water supply, sufficient for a large defending force, could not be had by the construction near the camps of as many dew ponds as were required. I am of opinion that the use of dew ponds as a method of water supply, is itself a British survival.

The largest Hampshire camp is Walbury (Pl. XV) at the north-west corner of the county, and partly in Berkshire. It overlooks the extensive valley of the Kennet, and is constructed on the high ridge of chalk down between this valley on the north and the dry chalk valley of Combe on the south. It has a natural scarp as a defence on three sides. Its dimensions are 550 yards from north to south, and 783 yards between the two gates or openings nearly east and west. Its area has been cultivated as arable land, but is now waste, and is covered with such an immense quantity of flint as would have formed an inexhaustible supply for flint weapons, sling stones, and other articles of stone warfare. Stone implements of various kinds, such as neatly trimmed spear heads, cores, flakes, and arrow tips, have all been found within the area of Walbury and many other implements of the later stone age have been found in parts of the country within easy access of it, both in the Kennet valley, and on the chalk downs, and in the vales on the south, leaving no doubt of its use during the later British stone age. The people for whom it was a camp of refuge, must have inhabited the great valley it overlooks on the north, as well as the chalk vales on the south. It contains within its area or just outside its ditch, several dew ponds at the present time, and the highest part of its area is the highest elevation the chalk anywhere attains in England, viz., 974 feet above Ordnance datum. Walbury would certainly have formed a shelter for some thousands of men in addition to women and children, and also cattle. If we take the computation adopted by General Pitt-Rivers, in considering the probable garrison of Cissbury Camp in Sussex<sup>1</sup>, viz., the lowest computation according to modern notions, two men for every yard of parapet, and one third more as a reserve, then as Walbury has about 2,100 yards of parapet, it would require a garrison of 5,600 men. Within reach of this camp there certainly is on the north, a large area of land capable of affording food supplies for a large tribe, and there are fertile valleys on the south. As I stand within the area of Walbury and view the country it commands north and

<sup>1</sup> "Examination of the Hill Forts of Sussex," by Colonel A. H. Lane Fox, (Gen. Pitt-Rivers), p. 23.

south, I see no difficulty in believing that it was a tribal camp of refuge, for some thousands of men and women with their families and cattle, and from its extent, its position, and the nature of the country within easy access of it, I am of opinion that a relatively large population lived around Walbury during the British stone age, and probably later.

I think this population was considerably greater than that which lived in the Itchen valley round St. Catherine's Hill close to Winchester, because the earthwork at Walbury is much larger than that on St. Catherine's Hill. As regards the probable food supply also, the contracted valley of the Itchen near St. Catherine's Hill, could scarcely have supported so large a population as the much more extensive Kennet valley near Walbury.

The earthwork on St. Catherine's Hill is, however, a large camp, and if we apply to it the same calculation as to the number of men required for its defence according to the figures mentioned by General Pitt-Rivers in relation to modern warfare, it would require about 3,300 men for its full defence. St. Catherine's Hill Camp is the only large earthwork in the Itchen valley remaining at the present time, but there are indications that a smaller one may have existed at Bishopstoke, about six miles lower down. I can quite believe that a British population able to find 3,000 fighting men for the defence of St. Catherine's Hill may have found subsistence in the Itchen valley north and south of this fortress, and within reach of its defences in case of need. Although its elevation is only 327 feet, a permanent dew pond sufficient for a flock of sheep is found at no great distance from it, and the Itchen flows past the foot of this steep hill.

In the valley of the Test and its branch the Anton, south of Andover, we have the hill fortresses of Bury Hill about a mile and a half south west of Andover, Danebury about six miles south of it, between the valley of the Test on the east, and Wallop valley on the west, and Woolbury about two miles east of Stockbridge on the opposite side of the river, nearly six miles from Danebury, and about eight from Bury Hill. Danebury differs from the others in having several lines of defence, and its interior ramparts and fosses of great height and depth, as much as thirty feet. From these and other indications, and from articles of the Roman period having been found within it, it is probable that it was occupied and strengthened in Roman time. There are proofs also that Bury Hill was similarly occupied, but I do not think that such a later occupation casts any doubt on the British origin of these strongholds, for they are typical British camps, and not Roman earthworks, and one of them, Bury Hill, has a Roman earthwork at its base between it and the

river. As these three British camps are of about the same area and extent, I draw the conclusion that a population numerically about the same lived within reach of them.

In the valley of the Micheldever stream, a branch of the Test, there are the remains of two camps of about the same size known as Tidbury and Norsbury, similarly situated on high ground at no great distance from the stream, one about five miles higher up the river than the other. I consider they formed camps of refuge for a clan or small tribe of British people numerically about the same.

As far as I am able to judge from the appearance of the country at the present day, I am inclined to think that the area of the country suitable for cattle grazing round such a camp as St. Catherine's Hill, would in British time have been about as much larger than the cattle grazing area within reach of such a camp as Norsbury, as St. Catherine's Hill Camp is larger than Norsbury Camp, and I think the populations inhabiting these areas must have been about in the same proportion.

Perhaps the best example of a Hampshire camp conveniently situated as stronghold for its district, is that afforded by Old Winchester Hill in the valley of the Meon. This is the only earthwork in the district, and the upper part of the valley which it overlooks has a winding course from East Meon to Droxford. The stream first flows north, then west, south west, and south, and the earthwork known as Old Winchester is conveniently placed on the highest and strongest position of the district, 653 feet above the sea, and owing to the winding of the valley about equidistant from different parts of the valley on the east, north, west and south west. This was the part of Hampshire occupied by the Jutes after the West Saxon conquest, and their settlement included the entire valley southwards to the sea near Titchfield. Old Winchester in the upper part of this valley, was clearly the stronghold of the British tribe that preceded the Jutes. Its ramparts are about 1,000 yards in extent, and no doubt were stockaded. If we apply the same lowest modern computation to these ancient defences, viz., two men to a yard of parapet, and one third more in reserve, then Old Winchester when fully defended would require a force of 2,666 men. We know that the Jutes subsequently occupied the entire length of this valley, and it is extremely probable that the British tribe which preceded them did so likewise, for it was separated by forests from the other Hampshire valleys, as late as the middle ages.

From a careful consideration of the district, I have no doubt that this fertile valley could have supported a British tribe sufficiently numerous to defend this fortress, and whether we

take the modern figures suggested by General Pitt-Rivers, or a lower calculation, we have I think in the fortress of Old Winchester, a means of estimating approximately the density of the old British population in the valley of the Meon.

The pensinular earthwork of Bransbury at the junction of the Mecheldever stream with the Upper Test, is a fortification of much interest, inclosing a considerable area by a single entrenchment, consisting of a deep outer ditch and a bank constructed straight from marsh to marsh, and as we may probably consider the marshes of the Test and its tributary stream, to have been impassable in the British stone age, I think Bransbury was a camp of refuge, perhaps as a second line of defence, for a population sufficiently numerous at least, to have been able to defend its ramparts and fosse.

I do not think there is any evidence to be found in Hampshire of the extermination of the British population by their Anglo-Saxon conquerors, but on the contrary I think there is considerable evidence to be found in that county for the opposite view, that a portion of the British population was spared, and subsequently became blended with the Saxon race. Nearly all the water place-names are of Celtic origin, and we have traces of village communities within easy reach of hill fortresses. In some cases the traces of communal arable fields are found almost close to the old British earthworks, and far distant from the nearest of the existing villages. In one instance at least the hill fortress for defence, appears to have been continued in a modified condition into early Anglo-Saxon time, viz., that of Burghclere, or Boroughclere, a place which certainly derived its name from two British camps on high hills, on either side of the narrow valley, which forms the only natural pass for many miles from the Berkshire country into this part of Hampshire, and which was a place where toll was taken as late as the date of the Domesday Survey. The existence of the Burghclere earthworks, the only large camps between Silchester and Walbury, proves I think that the clearing in this part of the great northern forest of Hampshire round these earthworks, whether wholly natural, or partly artificial, is as old as British time, and that a population which we may perhaps estimate by the size of the earthworks, lived within reach of them. On several sides of these earthworks the remains of many small communal fields may be traced on the hill slopes, and in one of the valleys much black earth resting on chalk and probably connected with habitations here, may be seen, close to the outlines of the communal fields. Close here also on the south, are the well-known Seven Barrows of North Hampshire. One of the most ancient roads in the county also leads from these camps direct to Walbury in the

north-west. The undoubted signs of former inhabitants in the valleys near the Burghclere earthworks, seem to me to throw a light on their probable uses, and the comparatively large size of these earthworks, appears to me to denote that a relatively large population sufficient to defend them lived about here in the Clere district, a British forest clan or tribe, living in perhaps the earliest forest clearing we can trace in Hampshire.

The allodial tax, known in Anglo-Saxon time as *Burh-bote*, for repairing local defences, becomes a very intelligible tax, when considered in reference to such a place as Burghclere, and may have been derived as a survival from the common defence of British strongholds. It must be remembered also that the allodial tenure of land is the most ancient tenure in this country of which we have any knowledge. The best example I have met with in the county is that in the Isle of Wight, where as late as the Domesday Survey a large number of manors were held allodially.

I think there can be no doubt that the earliest fortification at Carisbrook was constructed in British time, and that the allodial obligation attaching to the Isle of Wight manors in the time of the Survey, were connected with its defence, the one great stronghold in the island. Certainly in succeeding ages the manors in the island were held by the tenure of defending Carisbrook Castle.

It is not difficult to realise that as land gradually ceased to be held in community, and became held in severality, the obligation of local defence would remain attached to the land.

In a county which contains so many visible remains of ancient British life as Hampshire, in its earthworks, and hundreds of existing barrows and tumuli, and which contains also surviving British customs, and place-names, it is difficult to realise how these names and customs could have endured except on the supposition that a part of the British population became blended with the West Saxon race, and so transmitted their customs and names, and as I think, in part, their religion.

I may here remark that the usual local name for an earthwork in Hampshire is *castle*, a name not without its significance as a place of local defence, in the folk lore of the country.

One of the most remarkable of the Hampshire earthworks in some respects, is that of Merton, now inclosed within the park of Hursley near Winchester, which is also the name of the parish, but the name of the manor is derived from Merton the name of the earthwork. On the lands of this manor the custom of Borough English still survives, and in this instance there can I think be no doubt, that we have a

venerable British custom surviving on the land which gets its manorial name from a British earthwork.

I think that comparatively large populations lived within reach of the Hampshire earthworks in British time, and that they were their camps of refuge, or local defences in tribal or intestine wars, perhaps clan wars. The British inhabitants of Hampshire do not appear to me to have advanced beyond the clan or tribal condition in pre-Roman time.

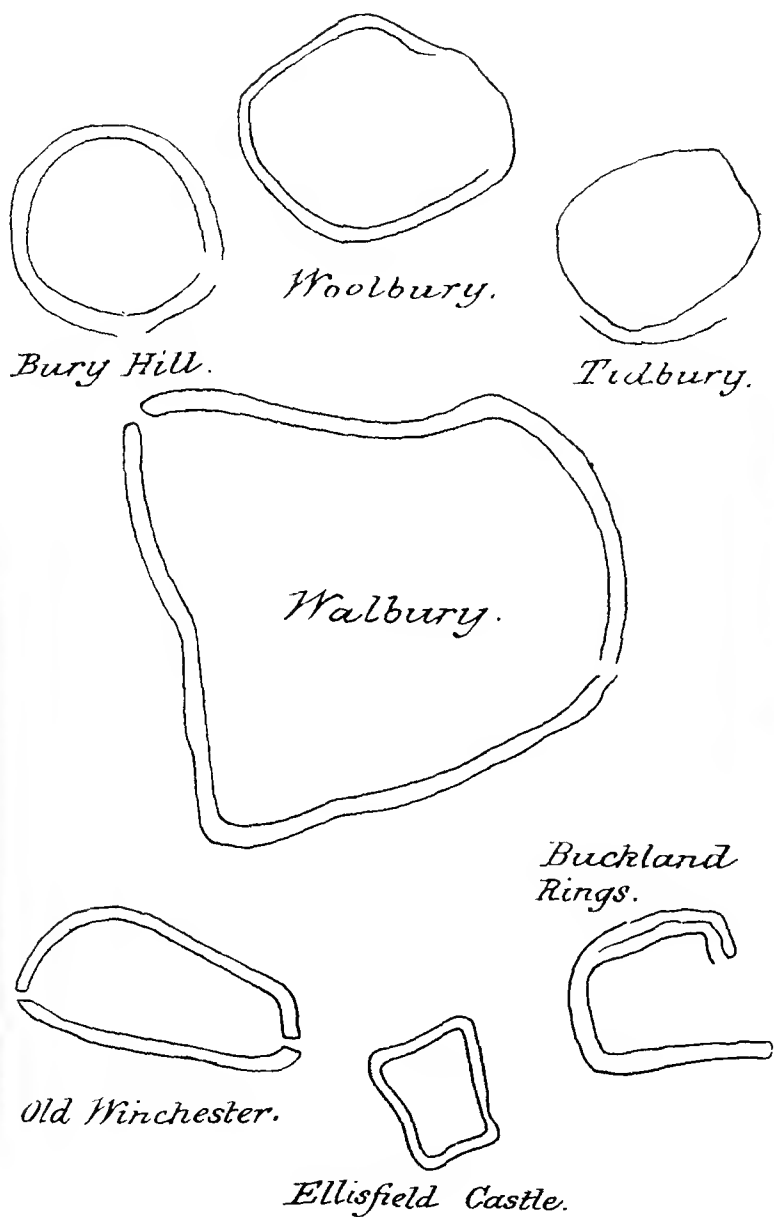
The geographical distribution of our Hampshire earthworks is the geographical distribution of our river valleys. The intervening stretches of ancient forest land is, for the most part, free from remains of ancient earthworks, which are found overlooking the river valleys, or those dry upper valleys a little above the permanent sources of the streams. The British settlements were evidently regulated by food supply, and I think the geological surroundings of these settlements show that the necessary food for cattle was a first consideration.

We have in Hampshire some remarkable British burial sites, viz., those like the site of the Seven Barrows south of Burghclere, just above the highest sources of the streams. One of these has lately been discovered at Dummer on the watershed between the dry upper valley of the Loddon and a dry upper valley of the Itchen basin. On this site thirteen cinerary urns of a very early type have been found within a few square yards, and it is probable that others will be found when our exploration is renewed in the spring. The old name of this parish, *Dummer*, would appear to denote the former existence here of a dun or earthwork that has long since disappeared.

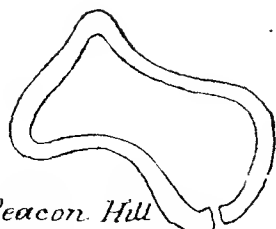
There is a scrap of evidence of a documentary kind bearing on the subject of this paper, which is quoted by Dr. Beddoe, in his book on "The Races of Britain,"<sup>1</sup> and which, as I have been unable to consult the original, I may perhaps be allowed to quote on his authority, viz., an extract from the Welsh Triads, in which the Belgæ are referred to as inhabiting that part of Britain called the "Arlechwedd Galedin," extending from Kent to Somerset, and in which these Belgæ are described as "the refuge taking men of Galedin." From a careful study of the earthworks of Hampshire and some others in the neighbouring counties, I can come to no other conclusion, than that these earthworks were camps of refuge, and as such I think there can be no doubt they were constructed with a distinct reference to the number of people who would defend them, and whom they were designed to protect. Flint flakes may be found in or near these camps at the present day, and occasionally other

<sup>1</sup> Beddoe, "The Races of Britain," p. 23, quoting from the Iolo MSS., p. 477.

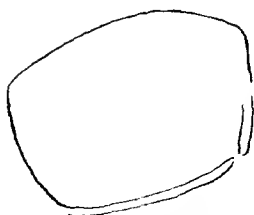




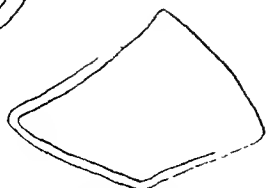




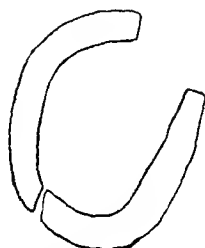
*Beacon Hill  
Burghclere.*



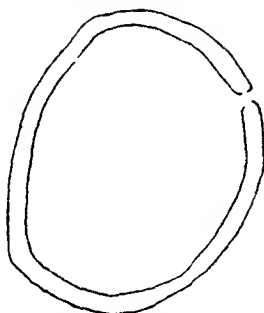
*Winklebury.*



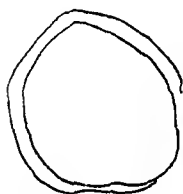
*Egbury*



*Bramley*



*St. Catherine's Hill.*



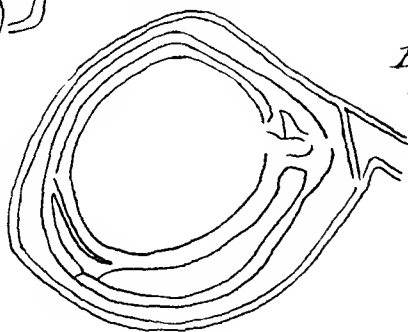
*Norsbury.*



*Merton.*



*Pound in  
Harewood.*



*Danebury*



*Woodgarston.*



*Ashley.*

evidences of Neolithic stone workers may be found, from which it appears that they were constructed in the British stone age. It is certain however that many of them were used as late as the time of the Roman occupation.

*Description of Plates XV and XVI.*

The accompanying plates show the relative sizes of some of the Hampshire camps and also their shapes. These outlines have been traced from the six-inch Ordnance map of Hampshire, and the reader is referred to that map for further details concerning the surroundings of the earthworks, and for their heights above ordnance datum. The ramparts and fosses of some of the camps are now covered with wood.

The following are the references to the sheets of the six-inch Ordnance map of Hampshire, on which the outlines of these earthworks will be found.

Earthwork.				No. of Sheet on the Hampshire six-inch Map.
Walbury .. ..	..	..	..	II.
Woolbury .. ..	..	..	..	XXXII.
Bury Hill .. ..	..	..	..	XXIII.
Tidbury .. ..	..	..	..	XXIV.
Old Winchester .. ..	..	..	..	LIX.
Buckland Rings .. ..	..	..	..	LXXX.
Ellisfield Castle .. ..	..	..	..	XXVI.
St. Catherine's Hill .. ..	..	..	..	L.
Beacon Hill, Burghclere .. ..	..	..	..	VIII.
Egbury .. ..	..	..	..	XVI.
Winklebury .. ..	..	..	..	XVIII.
Bramley .. ..	..	..	..	XI.
Norsbury .. ..	..	..	..	XXXIII.
Merdon .. ..	..	..	..	XLIX.
Danebury .. ..	..	..	..	XXXI.
Pound in Harewood .. ..	..	..	..	XXIV.
Ashley.. ..	..	..	..	XL.
Woodgarston .. ..	..	..	..	X.

DISCUSSION.

Mr. R. B. HOLT agreed with the reader of the paper that the Hampshire earthworks were places of defence and refuge. They would naturally be erected where there was the most danger. This was unquestionably in the north. Had Mr. Shore indicated their situations it would probably have appeared that the most important of them were, like Walbury, in that direction, being probably intended either to check the incursions of the Atrebatii, who inhabited the district immediately north of the hill, range, and of

the tribes who lay beyond them; or else they were erected by the Britons to keep the Belgæ (Ravagers) within the bounds assigned to them. In either case a great part of the garrisons would come, when needed, from a distance. The numbers, therefore, which were required for their defence would hardly help us to estimate the local population. Winchester was probably a metropolis, even before the Saxon era, and consequently would be strongly fortified. The coast, too, would require protection, and there also are considerable earthworks.

Mr. A. LEWIS said the only one of the earthworks mentioned by the author with which he was personally acquainted was St. Catherine's Hill, near Winchester, where he himself had picked up some worked flints. He agreed with Mr. Shore in thinking that the population of Britain in pre-historic times was larger than was generally supposed, but thought the size of the earthworks was governed by the formation of the ground as well as by the number of inhabitants. Mr. Lewis also referred to the conclusive evidence brought forward by General Pitt-Rivers as to the higher level of water in Wiltshire in Roman and pre-Roman times, as affecting the question of water supply for the camps, &c.

Professor RUPERT JONES, referring to the old camps or hill-forts described by Mr. Shore in his very interesting paper, asked if the author had looked at them, and at their relative positions with reference to the old roadways and fords of the country. The speaker had seen in North Hants and in Berks that these camps or "castles" often (if not always) had a definite relation to roads and fords; and he thought that they probably served, not only for defence, but also for offence, among the ancient tribes. He also alluded to the various and sometimes apparently redundant ditches and banks of the old earthworks as noticed and described by his friend Colonel C. C. King.<sup>1</sup>

The REV. CANON BENHAM, being called on by the Chairman, endorsed Mr. Shore's opinion that old Winchester was a British camp, a place of retreat for the inhabitants of the Meon Valley whenever a hostile force, whether inland or from across the sea, appeared to attack them. Meon was the name of the river which ran through the valley, and he believed that it meant "stony," referring to the flints which formed its bed. The village of Corhampton, at the foot of Old Winchester, commonly pronounced "Carmenton," and so called in Domesday, he took to mean the "Camp of the Meon." Referring to another point raised by Mr. Shore, Canon Benham quoted from the Anglo-Saxon Chronicle the statement that when the South Saxons landed on the coast they slaughtered every Briton, but expressed his belief that however it might be in Sussex the West Saxons did nothing of the kind in Hampshire, and pointed to the curious fact that North Hampshire has so many churches

<sup>1</sup> In the "Trans. Newbury District Field Club," and the "Trans. Berks. Archaeol. and Architect. Society."

dedicated to French saints. His theory was that on the arrival of the English settlers large numbers of the Belgæ removed into the woods of North Hants, and founded settlements of their own. He thought there were signs of a camp on Beacon Hill, opposite Old Winchester, though Mr. Shore doubted it.

Mr. T. V. HOLMES remarked that the author would have added much to the interest of his valuable paper had he marked the positions of the various camps on a geologically coloured map. The speaker's own observations had given him the impression that their distribution was extremely irregular. For distances of many miles along the edge of the Chalk escarpment, for instance, none would appear, while further on, where combes tended to isolate a portion of the ridge, they abounded. To visit the three large Wiltshire camps of Bratton Castle, Battlesbury, and Scratchbery, for example, involved only a walk of about six miles, while in other localities, where naturally strong positions did not exist, they were few and far between. But he did not remember ever seeing a naturally strong site without a camp upon it. As regards the population necessary to garrison these camps, he thought any estimate would be erroneous that excluded women and children. For women and boys and girls of fourteen and upwards would be almost as efficient behind palisades as full-grown warriors, during a siege of short duration.

The AUTHOR, in reply, expressed his thanks for the friendly criticism with which the paper had been received. The occurrence of extensive intervening tracts of forest land between the rivers he thought, rendered it improbable that the British population was migratory. He pointed out that Walbury Camp was not on any British tribal boundary, but from being at the extreme northern limit of the watershed of the Test, its site had been adopted in Anglo-Saxon time as the northern limit of the county. He thought the higher water level in the chalk, which must have prevailed in British time, helped his argument by rendering the water supply to the hill fortresses an easier matter than it would be at the present day. He considered it likely that in the upper part of the Test valley where several earthworks are near together, the British clan living around them, might have had more than one castle of refuge. In reply to Professor Rupert Jones, the author said the Hampshire hill fortresses were similar to those in the north of Berkshire, and like them were connected by old British roads. Some of the deepest of hollow roads in the county were in the neighbourhood of these earthworks or where they formerly existed. In one instance he could show such a road that was described as a hollow way in an Anglo-Saxon charter. He had also observed that, in cases in which the earthworks are near streams, they are conveniently situated to the fords. The author thought the survival of a large number of place-names in Hampshire, and customs of a Celtic origin, with other evidence of a similar nature, proved conclusively that the British population of this county was not exter-

minated, notwithstanding the assertion to this effect of writers many centuries after the Anglo-Saxon conquest. In reply to Mr. Holmes, the author said there were many strong natural positions in Hampshire which had no remains of earthworks on them, but on some other similar sites old entrenchments had probably existed. The earthworks were not confined to any part of the county, but fairly distributed over it, having regard to the river valleys. In reply to an observation of the President as to the camps being at the same time a shelter for cattle, and a refuge for the people, the author thought that it was probable these stockaded enclosures would be used at times by the communities living quite close to them, to protect their "capital" against the cattle raiders of neighbouring clans, and that probably at other times these camps were more numerous manned for tribal defence. The author thought the great labour required to construct these earthworks, would only be undertaken by those who had families and homes to protect near them.

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MISS BUCKLAND then read the following paper :—

*The MONUMENT known as "KING ORRY'S GRAVE," compared  
with Tumuli in GLOUCESTERSHIRE.*

By A. W. BUCKLAND.

[WITH PLATE XVII.]

IN 1887 I had an opportunity of visiting the ancient monument in the Isle of Man known locally as "King Orry's Grave," a name which is repudiated by antiquaries as misleading, but which having crept into guide books and even into archaeological works, may perhaps be retained for the present, as until it received it, from some modern tourist, it appears to have been nameless, or to have been known only as the "*Cairn on Gretch veg.*"

This monument which belongs evidently to that class denominated Long barrows, Chambered tumuli, Giant's graves, Hunne bedden, Allées couvertes, &c., according to the locality in which they are found, possesses certain peculiarities sufficiently uncommon to render it deserving of especial notice. The best description of it is given in *Oswald's Vestigia* as follows :—

"Another cairn of considerable dimensions stands on the farm of Critch (Gretch) veg. This example comprises a series of stones in the east, placed in a semi-lunar or circular form, from which a flat terrace of loose stones leads westward, to the brow of a ravine where it terminates in a large cairn of stones thirty feet in diameter, out of which rises a tall thin conical slab to the height of ten feet and upwards, in a picturesque manner. These two objects, the cairn on the west, and the semi-circle of stones on the east, are distant from each other upwards of forty yards.

The terrace connecting them is bisected by the high road, and on being opened, was found to be made up of two rows of immense flat boulders, placed edgeways, four feet apart, and inclining inwards towards each other so as to form an arch."

It does not seem easy at present to trace the plan of the monument as described by Oswald, but the tall monolith remains in position, and some of the chambers, especially at the west end are intact, although the covering stones are gone. Cumming, writing in 1848, says, "A few years back the owner of the property on which it stands, not having the fear of fairy or phynodorree before his eyes, but seeing the stones lying convenient for a fence he was building, set to work to remove some of the lesser, from the central heap of apparent rubbish in which they were fixed; in doing this he discovered a rude dome-shaped vault, in the centre of which was a kistvaen composed of two large slabs of schist, placed parallel to each other in a direction nearly east and west, but inclining towards each other above; at the extremities of which seem originally to have been placed vertically, thin slabs of the same rock which had been broken."

The distinctive features in this long chambered-tumulus, are first the tall thin monolith, composed like most of the monuments in the island, of slaty rock, and as far as I could see totally devoid of any markings or carving of any kind, and secondly the two stones in the centre of the vault, hollowed out so as to form an elliptic opening, in which respect and in some others, it resembles so nearly, similar monuments in Gloucestershire, as to make it almost certain that in each instance the same race were the constructors. Dr. Thurnam<sup>1</sup> has pointed out the singular distribution of these chambered Long Barrows, of which by far the larger number are found in Wiltshire, Gloucestershire, and in the adjacent parts of Dorset, and Somerset. Those which are found in the Midland Counties and Yorkshire he considers to belong to a different type, and those in the Scilly Islands, Wales, the Channel Islands, Brittany, the North of Scotland, the Orkney Islands and Ireland, although they are chambered barrows, are for the most part not long, but round. There are however true long-chambered barrows in Brittany, and that of Mané Lud, appears to bear a strong resemblance in form to "King Orry's Grave" as figured by Oswald; as does also the one at West Kennet, Wilts, but in both these the crescent at the east end and the tall monolith are wanting. One feature seems common to all these chambered tumuli, namely the dome-shaped roof of the chief chamber, formed by overlapping rows of stones capped by one broad flat stone, with a long low rudely arched gallery, leading from chamber to chamber. It is a mode of

<sup>1</sup> *Archæologia*, Vol. 42, Chambered Long Barrows.

uilding doubtless representative of the domestic architecture of the time, and Dr. Thurnam shows how closely it resembles the dwellings of the Esquimaux of the present day; but with regard to the entrance, there is considerable difference. Generally a curved wall of rubble or of standing stones leads to an entrance through a pair of upright stones joined together by another stone forming a trilithon like those of Stonehenge, though much smaller; and through this the principal chamber, usually at the east end of the barrow, is entered; but in a few instances the entrance is through an elliptical opening cut in two stones, as in that denominated King Orry's Grave. The number of these elliptical openings known may I think be counted on the fingers—three of them are in Gloucestershire at Rodmarton, Avening, and Leighterton, one is described by Mr. Lukis in Brittany, and besides these King Orry's Grave in the Isle of Man. The Men-an-Tol in Cornwall, and a similar holed stone now at the Museum of St. Germain, near Paris, probably (in the latter case certainly) formed the entrance to chambered tumuli, but in these cases the hole is round and cut in a single stone. Many other holed stones are known, in India, Peru, Brittany, Wales, Scotland, and I think also in Sweden, but they are not similar in form, and in most cases are too small to admit a body, appearing as in a state of survival, and originally representing probably the Eastern idea of a new birth. Dr. Thurnam supposed that these elliptical openings were made simply to allow of the burial of fresh bodies as required; but as that could have been effected much more easily by the trilithon arrangement, we may be allowed to suppose there must have been some mystic symbolism connected with this especial form, and when we consider the use of the egg, as the symbol of new birth, in Egypt and the East, as well as among those mysterious priests denominated Druids, a symbolism not yet extinct among us, as witness the Easter egg, we may I think be justified in supposing that these ovate openings to chambered tumuli were of especial significance, and reserved perhaps for the tombs of chiefs or of the priests.

The symbolism of these curious monuments known as long-barrows of varied form as regards internal arrangement, but almost always simulating externally the form of an egg or pear cut in half longitudinally, has not been sufficiently studied, but they appear to me to bear an evident allusion to sun worship. In the case of "King Orry's Grave" if the plan of Oswald is to be relied on, the moon would seem to be joined to the sun, by the long gallery connecting the crescent at the east end, with the circle at the west, whilst the chambers enclosed within the circular vault, are, as is generally the case, square, the form always symbolical of the nether world, the abode of the dead. With regard to the remains met with

in these chambered barrows, they everywhere consist of numerous skeletons, some in an imperfect condition as though not interred until after the removal of the flesh, and sometimes, though rarely, partially cremated; and in addition to these human remains there are usually found many bones of ox, deer, boar, and sometimes of horse and dog, and also flint flakes, and the tusks of boars perforated for use either as implements or ornaments, but never metal tools, although, from the persistent legends of treasure guarded by dragons, said to be buried in these tumuli, they have all probably been rifled. The animal remains are supposed to indicate sacrifices or funeral feasts, and are generally separate from the human remains, although in two or three cases bones of children and of young men have been found with these, indicating, as is supposed, human sacrifices of captives or slaves. In connection with this, a very curious fact is noticed by Thurnam, namely, that in a great majority of these chambered long barrows, some of the skulls are cut open (see Pl. XVII, fig. 4) ; four of these cleft skulls were found at Rodmarton, the supposition being that this was the mode of death adopted for human sacrifices, although it must certainly have required great strength and skill to have administered such a blow with a stone axe.

A very singular discovery which appears to me to bear upon this subject is reported to have been made in Peel Cathedral in 1871, where, in clearing away an accumulation of rubbish in one of the arched recesses of the chancel, a skeleton was discovered with the skull cleft in the manner described, and with it, the remains of a *dog*. From the place in which this skeleton was found it was presumed to be that of Bishop Simon the re-builder of the cathedral, and a tomb was erected over it accordingly, but the striking resemblance between King Orry's Grave and the tumulus at Rodmarton, where so many of these cleft skulls have been found, leads to the inference that this skeleton must have come originally from some chambered tumulus, of which King Orry's Grave is not the only one on the island, and buried later in the Cathedral as a Christian martyr. There is historical record of one such burial in England, for Leland relates that at Ludlow in clearing away in 1199 a chambered barrow, which formerly existed on the site of the present churchyard, three stone chambers or cists containing human remains were discovered, which the clergy of the place maintained were relics of three Irish saints, and buried them *within the Church*, where they wrought many miracles. Considering the connection of St. Patrick with the Cathedral at Peel, it seems probable that this body, disinterred from some tumulus, may also have been regarded as an Irish Saint and Martyr, and therefore buried in

the place of honour, and subsequently walled up with other relics at the time of the Reformation, and I believe also that a dim remembrance of the dog, buried with this supposed martyr, gave rise to the legend of the Muddy Dhoo, "the spectre hound of Man," immortalized by Sir Walter Scott. The finding of bones of the dog with the skeleton of the chieft skull, also strengthens the supposition that both came from some chambered tumulus, since in many of these, dogs are found buried with human remains.

There is, just outside Peel Castle a mound about 90 feet long known traditionally as the Giant's Grave, and although it is not known to have been explored, it seems possible that the skeleton referred to may have come from it.<sup>1</sup>

There is another cairn known as *Cashel Goree* about three miles north of that called "King Orry's Grave," which is described as a semi-circle of stones, from which proceed three rows of stone chambers in an easterly direction, and still another, now called the cloven stones, which from the description given of it by Cumming and Train seems to have been almost identical with "King Orry's Grave." Cumming says "In Douglas Road, about one mile from Laxey, there is on the southern side of a little ravine, a small circle of twelve stones, one of which, six feet high, is remarkable as being cloven from top to bottom. The tradition is, that a Welsh Prince was here slain in an invasion of the island, and that these stones mark the place of his interment. Mr. Feltham mentions the discovery in the centre of the circle, of a stone sepulchral chest or kistvaen, and in the view which he has given of it as existing at the time of his visit, there is a clear indication of a coved roof of stones, forming an arched vault in the centre of the mound."

This description is amplified by Train, who says:—"The circle was considered to be Druidical, but an excavation laid open a tumulus of about two hundred feet in diameter, exposing on two opposite sides of it the base of an arch, which in rough stone work was formerly sprung over the spot, inclosing an interior vault of fifteen feet square. Near the centre of the vault is a tomb of most singular and unique construction. Two large convex stones form the sides of this tomb. They measure nine feet in length by six feet broad, and eight inches in thickness. They evidently bear the marks of detached pieces of stone worn by the action of water into a flat ovate form, and made convex and concave not unlike the form of a clam shell; these are placed upon one edge about three feet apart at the bottom

<sup>1</sup> It may be of interest to note that the traditional giant of this grave is said to be the original of the three-legged Manxman, a legend which is suggestive of the many bodies found in these chambered tumuli, of which the legs are often found entire.

and inclining towards each other as they rise, leaving a small aperture at the top of a foot or eighteen inches in width. Over this in all probability, a thin cover stone had been laid, so that the tomb originally, was a case of concave stones like three clam shells so placed as to form an ovate space within their cavities. Within the vault human bones and teeth in considerable quantities have been found."

As regards the age of long barrows all antiquaries regard them as the earliest monuments known. Thurnam thinks there is evidence to prove that in Wiltshire and Gloucestershire they are older than the Belgic dykes, some of which make a curve to avoid them, and although the chambered long barrows are more recent in date than the *unchambered*, yet they are all believed to belong to the stone age. A piece of iron called a horse-shoe was indeed found in that known as "King Orry's Grave" but as this is a solitary instance, and the cairn had evidently been previously rifled, there is no evidence to prove that it belonged to the original interment.

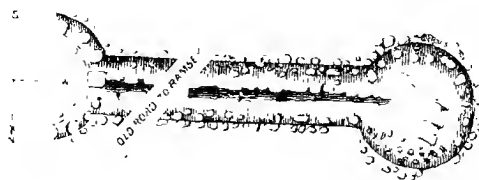
The legend connecting the Cloven Stones with Wales, must also be noticed. There can be no doubt there was considerable intercourse between Wales and the Isle of Man in very early times, and it is just by that route that we should look for a connection between the island monuments and those which bear so very near a relationship to them in Gloucestershire; but as far as I am aware none of the Welsh tumuli are so nearly like those of Gloucestershire, as "King Orry's Grave," that which bears the nearest resemblance to them at Plas Newydd, Anglesea, differing in several particulars. Thurnam ascribes the Gloucestershire tumuli to the Dobuni, and as it is evident that a cognate people must have been the builders of those in the Isle of Man, the question arises whether they reached that island through Wales, or by a separate route from the continent of Europe, where in Brittany similar monuments are found. Again, the Isle of Man was also closely related to Ireland in pre-historic times, and there is evidence to prove that at one time a land connection existed between the two islands, although that perhaps had been broken up before either was inhabited by man. But neither in Ireland, nor in Scandinavia do we find monuments so nearly related to this long chambered barrow called "King Orry's Grave" as those of Gloucestershire and Wiltshire before referred to. The great chambered tumuli of Dowth and New Grange, in Ireland, and those in Scandinavia, Scotland, and elsewhere, although bearing some resemblance, differ much in form and arrangement, and in none, as far as I am aware, has this peculiar form of entrance, through the ovate opening cut in stones, been found, whilst the sculpturings existing upon

them seem to denote that they belong to a later period. It is at all events evident that the monuments in the Isle of Man belong to a date far earlier than that assigned to them by those who would refer them to King Orry and his successors, and must be relegated to that shadowy time when Mananin, son of Lleir, ruled the island, and shrouded it in impenetrable mist from the outer world.

In the discussion which followed the reading of this paper at Bath, Sir John Lubbock spoke of the holes in grave stones in India and other parts of the world as undoubtedly made for the entrance and exit of the spirit of the deceased. This is an opinion which I hold as strongly as Sir John Lubbock, and which I have brought forward on more than one occasion before the Anthropological Institute, but the larger holes, such as those at Rodmarton, Avening, and "King Orry's Grave," seem to me to belong to a different class: the large opening, made with so much care and labour of a particular shape, would hardly have been cut in these huge stones, unless they had been intended to admit something more material than a spirit, and when we remember that only one of these occurs in the long barrow at Rodmarton, containing numerous separate graves with several entrances, it seems reasonable to suppose that this especial egg-shaped form had a sacred and symbolical meaning: it appears to me to be very evidently connected with the eastern doctrine of the new birth, and I would venture to suggest that possibly these tombs, the openings to which are always found so carefully closed with stones and rubble, were opened only for the burial of a ruler, and that his son or chosen successor, crept into the tomb, emerging from it in sight of the whole tribe, as the embodiment of the deceased ancestor. It will be remembered that Buckley in Australia was received as the embodied spirit of a certain man, because he had taken a spear which had been stuck in that man's grave, and it appears to me that these openings in early tombs are connected with a similar belief.

#### *Description of Plate XVII.*

- Fig. 1. Plan of King Orry's Grave, from Oswald's "Vestigia."
- Fig. 2. King Orry's Grave, showing the tall monolith at west end: the asterisk marks the stones in which the ovate opening is cut.
- Fig. 3. Ovate opening in chambered tumulus at Rodmarton, Gloucestershire.
- Fig. 4. Cleft skull from chambered tumulus at Rodmarton, apparently resembling the one at Peel, Isle of Man, buried as that of Bishop Simon. Four skulls similarly mutilated were found in the Rodmarton tumulus, and one or more in almost all the chambered long barrows explored by Thurnam.

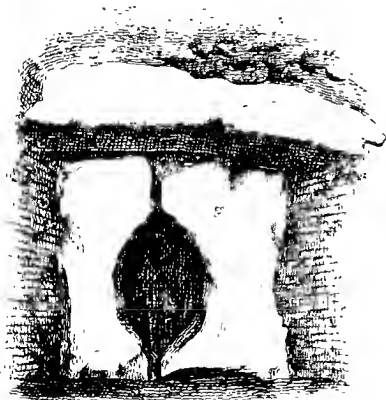


- about 30 yards

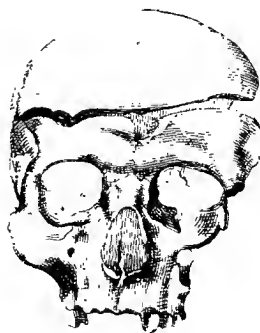
1



2



3



4

Scale, one quarter linear

KING ORRY'S GRAVE, ISLE OF MAN,  
AND REMAINS FROM RODMARTON, GLOUCESTERSHIRE



DISCUSSION.

MR. A. L. LEWIS said he had visited "King Orry's Grave" 18 years ago, and had described it in the 3rd number of the *Journal* of the Institute, but Miss Buckland had brought forward an old description of it, with which he was not previously acquainted, and which was of interest and value as tending to show that "King Orry's Grave" was one of a number of sepulchres in close contiguity. He thought Miss Buckland had been misled with regard to the Manné Lud by an old and inaccurate plan, and he exhibited tracings of modern plans, which had been sent to him by Admiral Tremlett, which showed that there was no connection between the dolmen at the end of the mound and the central chamber, that it was not domed but flat roofed, and was sculptured, and of the usual type of dolmens in the Morbihan. He did not think that the Men-an-Tol in Cornwall had ever been in a very different condition from that it was in now: the hole in the stone there and other large holes in stones were probably connected with the idea of a new birth, but the small holes were more likely to be intended to enable the spirit to go in and out of the tomb, which was quite a different idea. The feature that had struck him most about the Manx dolmens was the standing stones outside them, which he thought were in the nature of headstones, and perhaps had Scandinavian affinities. He did not believe in a special race of dolmen builders, nor, he thought, did M. de Mortillet. The similarity between the curvilinear opening in "King Orry's Grave" and those in Gloucestershire was striking, and had been noticed before, but the dolmens which had any arrangement of the kind were so few in comparison to the vast number which had not that he did not think any system of symbolism could as yet be shown to exist in connection with them; the subject, however, was a very interesting one, and he hoped Miss Buckland would continue her researches into it.

NOTE.—Since reading the above paper, I have seen in the "Graphic" an article upon Irish antiquities, in which the author, speaking of holed stones in graves, mentions a statement of Pausanias, to the effect that the Greeks were accustomed to feed the spirits of heroes with blood which was poured through a hole in the tomb: this statement appears to me of great importance in connection with the smaller holes so frequently found in tombs, not only in our own country, but in India, and it would be interesting to discover whether any similar rites still exist in India, where, I believe, some of the holed stones are not of great age. This, however, would not affect the larger holes such as that of "King Orry's Grave," which were evidently used for other purposes.—A.W.B.

The President announced that the annual general meeting would be held on Tuesday, January 22nd, and nominated Mr. E. W. BRABROOK and Mr. R. B. HOLT as auditors.

*The NICOBAR ISLANDERS.*

By EDWARD HORACE MAN.

[WITH PLATES XVIII TO XXII.]

*(A Paper read before the Institute on June 26th, 1888.)**Part I.*

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THERE may be said to remain at the present day but few races regarding whom accounts, more or less accurate, have not been published, but year by year the researches of Science reveal in clearer and yet clearer light the great care which is required of those who undertake the task of describing the condition and customs of uncivilised peoples, and it is now a recognised fact that any detailed report which is not based upon a long and intimate acquaintance with the language, as well as with the country and its inhabitants, must be received with extreme caution, so difficult is it for civilised man to appreciate the position and modes of thought of those in a lower scale than himself in the human family, not to mention those wild children of the forest whose wants are for the most part limited to the spontaneous products of the jungles, and whose knowledge of the past, present, and future has a not much wider range.

In 1871, when I was first appointed to the Nicobar Islands, I commenced a study of the dialect spoken by the natives living in the vicinity of the Government Settlement in Nancowry Harbour, with a view to facilitating ethnological researches among them. From that time to the present during my official residences in the group—of terms of varying duration, but amounting in all to nearly seven years—I have prepared a Vocabulary estimated to contain between 6,000 and 7,000 words of the language as spoken in the Central Group, besides collecting several hundred words of the five remaining dialects. The task, though not on untried ground, as in the case of my concurrent efforts in the same direction at the Andamans, was not lightened to any appreciable extent by the labours of others, for

the lists prepared by Fontana (1795), Barbe (1846), and the members of the Novara Expedition (1858), all of whom passed but a short time in the islands, were necessarily meagre and inaccurate; moreover, as they were not based on any recognised system of transliteration, and as the vowels were in no instance accentuated, it will be readily understood that the value of the contributions was considerably lessened.

The work of the late Mr. de Röepstorff<sup>1</sup>—assisted by his discovery, while on furlough in Europe, of the MS. list of Nicobarese words and translation of the Gospel, made nearly a century ago by the Moravian missionaries who laboured in this field for 19 years (1768–87)—marked a decided advance in our published knowledge of the dialect spoken in the Central Group.

It has been well said,<sup>2</sup> that to describe any language, “we must view it in relation to man generally, and to the particular race to which it belongs. We must first consider what the objects are which every language must accomplish; and next, the different degrees and modes in which those objects are accomplished in different classes, before we can appreciate the character of the particular tongue which may form the subject of our investigation”; these remarks are especially applicable to races which, like the Nicobarese, manifest in the structure of their language the external and alien influences which have been brought to bear upon them.

Among the many hindrances experienced in endeavouring to acquire a knowledge of the dialects of these islanders is the almost insurmountable one of obtaining the required information from persons whose articulation has not been materially affected by the frightful dental incrustation<sup>3</sup> which is so general among the adult population. This fact, when taken into consideration

<sup>1</sup> Between 1870, and the date of his tragic death in 1883, Mr. de Röepstorff was in charge of the Nicobar Settlement for six periods extending in all over some three and a quarter years, during which time he evinced a great interest in the natives, and devoted much time to the study of their language and mode of living; the results of his labours have been recorded in various contributions to the *Journal of the Asiatic Society of Bengal*, and in a posthumous work edited by his widow; but having to rely on his own resources for a system of transliterating the extensive variety of sounds—a large proportion of which comprise nasal diphthongs for which this dialect is remarkable—it is scarcely surprising that the principal defect in his laborious undertaking is due to an inadequate system of symbols. Mr. de R. so far recognised their insufficiency as to adopt a few changes at the last, but as he wrote to me a few days before his death he only aimed at preparing a vocabulary which would be useful to young students, and did not claim scientific accuracy for the system of transliteration upon which he finally determined.

<sup>2</sup> *Vide* “*Journ. Ind. Arch.*,” 1869, p. 647. Logan.

<sup>3</sup> *Vide* “*Teeth*,” p. 391, and “*Deformations*,” *post*.

with the extensive range of sounds contained in the language<sup>1</sup>—a large proportion of which consist of nasal diphthongs—will proclaim the task of transliteration to be one requiring time and much careful study. With the valuable assistance of Mr. A. J. Ellis, F.R.S., the sounds found in use among the Nicobarese have been reduced to a system rendered by an alphabet of 60 letters, comprising 21 oral vowels and diphthongs, 14 nasal vowels and diphthongs, and 25 consonants.<sup>2</sup>

The natural reserve of the natives towards aliens in all matters connected with their religious beliefs, superstitions, and practices adds greatly to the difficulties to be overcome in studying the race and acquiring a fair knowledge of their language, and the result attained has been achieved only by dint of constant gifts and promises of further reward, whereby attendance more or less regular, if not attention, has been partially secured.<sup>3</sup>

"The native does not like to be questioned. He credits the white man with possessing almost universal information, and often imagines he is being made a fool of."<sup>4</sup> Thus writes a recent traveller in the New Britain Group, and the same remarks may be applied to the Nicobarese. It is, therefore, necessary to proceed with extreme caution, and to substantiate the information obtained from a variety of independent sources ere it can be finally accepted as worthy of credence.

But before we proceed to a consideration of the habits and customs of the Nicobarese it may be well to gain a general idea of the position of the group, and of the main points of interest connected with their past history so far as this is ascertainable from the accounts of early navigators and settlers.

A glance at the map (Pl. XVIII) will show the islands to be situated between the sixth and tenth degrees of north latitude and between the meridian of 92° 42' and 94° E. of Greenwich; they thus lie midway between Little Andaman and Acheen, and form, with the Andamans, Coco and Preparis Islands, a series, as it

<sup>1</sup> "The language used by the Nicobarians is polysyllabic, abounds in vowels, and its pronunciation is harsh and far from being harmonious. After my arrival when I heard the natives speaking, it appeared to me that the sounds formed in the throat came out through the nose, and that the tongue—the usual instrument for producing distinct sounds—had very limited functions in their language. Young boys, as speaking generally more distinctly than grown-up persons, were my teachers at first, until my ear had been practised to the hearing of such confused sounds." "Notes on the Nicobars," by Rev. J. M. Chopard. "Journ. Ind. Arch.," 1846, p. 272.

<sup>2</sup> *Vide*, App. A.

<sup>3</sup> A plated cruet-stand and a silver cup were eagerly coveted, and I used to mark off imaginary portions day by day, taking care that the completion of my first Vocabulary should coincide with the winning of the prize.

<sup>4</sup> *Vide* "Journ. R. G. S.," January, 1887. "The Islands of the New Britain Group," H. H. Romilly.

were, of stepping stones of volcanic origin, connecting the province of Burma with the large island of Sumatra.

Regarding the origin of the group, many theories, it is almost needless to say, have been advanced. Mr. S. Kurz<sup>1</sup> considered that they "are, in all probability, remnants of a mountain range that connected Sumatra . . . and Arakan," while Mr. A. O. Hume,<sup>2</sup> although favouring the same theory, admits that a consideration of the fauna is not in support thereof, "since not only are almost all the most characteristic species of the Arakan Hills as we now find them absent from these islands, but these latter exhibit a great number of distinct and peculiar forms constituting where the ornithology is concerned, if we except the cosmopolite waders and swimmers, considerably more than one-third of the whole number known"; by others, again, it has been argued that evidence is afforded by the flora and fauna that the Nicobars were, at some remote period, connected with Sumatra and the Malayan Peninsula, and that the Andamans at the same time being connected with Burma, the greater part of the entire eastern section of the Bay of Bengal was almost entirely landlocked, the Ten-degree channel and the Straits of Malacca forming the only outlets.

But as none of the above theories can be said to meet satisfactorily all the difficulties which the matter at issue presents, we can only hope that ere long more exact geological or other reliable data will be forthcoming, by the aid of which light will be thrown on the vexed question of the past connection of these islands with the neighbouring continents.

The Nicobar Archipelago comprises twelve inhabited and seven uninhabited islands, viz. :—

	Square miles.		Square miles.
Car Nicobar .. ..	49·02	<sup>3</sup> Meröe .. ..	0·2
<sup>3</sup> Batti Malv. .. ..	0·8	<sup>3</sup> Trak .. ..	0·2
Chowra .. ..	2·8	<sup>3</sup> Treis .. ..	0·5
<sup>3</sup> Tillangchong .. ..	6·5	<sup>3</sup> Menchal .. ..	0·5
Teressa .. ..	34·0	Pulo Milo. .. ..	57·9
Bompoka .. ..	3·8	Little Nicobar .. ..	333·9
Camorta .. ..	57·91	<sup>3</sup> Cabra. .. ..	
Trinkut .. ..	6·40	Condul .. ..	
Nancowry .. ..	19·32	Great Nicobar .. ..	
Katchal .. ..	61·7		

It will thus be seen that the aggregate area of the group is about 635 square miles, or little more than one-fourth of that of the Andamans.

<sup>1</sup> *Vide* "Sketch of the Vegetation of the Nicobar Islands," by S. Kurz.

<sup>2</sup> *Vide* "Stray Feathers," Vol. II, p. 30.

<sup>3</sup> These are uninhabited.

For convenience of reference, the Nicobars are in the following pages divided into three groups, viz.: the Northern, Central, and Southern; but it should be explained that this must not be taken arbitrarily, for while *geologically* (as was pointed out by the late Mr. S. Kurz)<sup>1</sup> there are only two divisions characterising respectively the northern and southern portion of the group, we find, *philologically*, no fewer than six sub-divisions or dialects spoken within the same area. (See map, Pl. XVIII).

One of the earliest authentic allusions<sup>2</sup> we have to the Nicobars is—as with the Andamans—in Ptolemy's map of these regions, in which are represented a group of islands bearing the following inscription:—“*Satyrorum insulæ tres quarum incolæ caudus ut sunt Satyrorum habere dicentur.*” Ctesias may, it is true, be also cited as giving a similar account of the inhabitants, and the foundation of the myth may be traced, as will be seen later, to the garment<sup>3</sup> affected by the males in these as in many other tribes of the Malayan Archipelago.

The Arabian navigators of the ninth century also give us accounts of visits paid to the group, and Marco Polo, at a later date, makes mention of them in his wanderings,<sup>4</sup> but in none of the various documents to which we have access is there to be found a probable derivation of the name “Nicobar” as at present used to denote these isles, though—as mentioned by Colonel Yule—the nearest approach to the old nomenclature is now-a-

<sup>1</sup> “Geologically the Nicobars are divisible into two groups, the southern and the northern. The former comprises Great and Little Nicobar, with the adjacent islets, and Katchal. It is characterised by the predominance of calcareous sandstones (brown-coal formation). The northern group includes Nancowry, Kamorta, Trinkut, Teressa, Tillangchong, Car Nicobar, and the small islands near them. [This refers to Bompoka, Chowra, and Batti Malv.] Alluvial deposits and plutonic rocks are the conspicuous features here. This geological division admirably coincides with the general botanical appearance of the respective islands. While the islands of the southern group are forest-clad from the bottom to the top, the forests on the northern group are restricted to the plutonic rocks and to the slopes and dells of the older alluvium, while the hilly plateaux and ridges are covered with park-like grass heaths.” (*Vide* “Sketch of the Vegetation of the Nicobar Islands.”—S. Kurz.)

<sup>2</sup> The best known narratives and descriptions of the Nicobars and their inhabitants are those of Pères Faure and Taillandier (1711); Rev. J. G. Haensel (1787); Surgeon N. Fontana (1778); Lieut. R. H. Colebrooke (1790); G. Hamilton (1801); Rev. D. Rosen (1834); Rev. J. M. Chopard (1844); H. Busch (1845); Rev. P. Barbe (1846); Dr. H. Rink (1846); Novara Expedition (1858); Mr. W. L. Distant (1868); A. O. Hume (1873); Dr. V. Ball (1873); F. de Röepstorff (1874–83).

<sup>3</sup> *Vide post* “Clothing.”

<sup>4</sup> Col. Yule in his “Marco Polo,” Vol. II, p. 249, writes:—“They are perhaps the *Nalo-kilo-chéu* (*Narikela-deipa*), or Coconut islands, of which Hwen Thsang speaks as existing some thousand *li* to the south of Ceylon . . . . The islands are also believed to be the *Lanja bálús* or *Lankha bálús* of the old Arab navigators.”

days to be found in the name of one of the islands which is known as Nancowry.<sup>1</sup>

The first mention I have found of the name "Nicobar"<sup>2</sup> in its present form is in an old book of letters dated 1711, but published in Toulouse in 1810, the author, Père Faure, writes as follows:—"La principale de ces îles s'appelle Nicobar et elle donne son nom à toutes les autres quoiqu'elles aient outre cela un nom particulier."

A possible derivation may be suggested by the following extract from a paper by A. de Candolle (1885), on "The Origin of Cultivated Plants." "The presence of the coconut in Asia three or four thousand years ago is proved by several Sanskrit names . . . . The Malays have a name widely diffused in the Archipelago, *kalapa*, *klapa*, *klopo*. At Sumatra and Nicobar we find the name *njior*, *nieor*, in the Philippines *niog*, at Bali, *nioh*, *njo* . . . ." While the Nicobars have long been famed for the excellence of their coconuts, the only words which bear any resemblance to the forms above given are "*ngoât*" a ripe nut, and "*ni-nàu*," a half-ripe nut.

On questionable authority these islands have been described as "formerly known by the Malays as the Sambillangs or Nine Islands, and the Admiralty chart gives Sambelong as the name of the island of Great Nicobar. It is true that at the present day native traders employ this name, but only in connection with the Southern Group, but there are, to my mind, obvious reasons against the probability of the name having ever been used to designate the entire Nicobar Archipelago. The fact of there being nine (Malay *Sambilan*) islands and islets in the Southern Group may, perhaps, give a clue to the origin of the term: failing this, it may not be considered far-fetched to suggest that the name is derived from Sham Loong—*Sham* or *shom*, signifying natives or people, and *Loong* being the local name for Great Nicobar. From a careful study of the language it appears that in the dialect of the Central Group only is there any word which bears some resemblance in sound<sup>3</sup> to "Nicobar," i.e., "*da-nāhkaba*," which is the name of one of the "moons" in the dry season; whether the use of this word could have been understood by travellers to refer to the name of the island in lieu of a month is of course open to question, but I mention it in passing.<sup>4</sup>

<sup>1</sup> In Col. Yule's "Hobson-Jobson," p. 478, various renderings of the name are found.

<sup>2</sup> The name is unknown to the aborigines, who call the islands "*Mattai*," which signifies equally "land," "country," "world," "island," and even "village."

<sup>3</sup> Hunter's "Gazetteer of India," Vol. I, p. 195.

<sup>4</sup> In his "Jungle Life in India," (c. p. 207), Prof. V. Ball ventures the fol-

The physical aspect of the Nicobars leaves nothing to be desired to enhance its loveliness, and far surpasses that of the Andamans; the graceful and lofty Arcas, which are here abundant, are entirely lacking there, and whereas the Andaman jungles present almost one continuous mass of nearly the same colouring the Nicobar forests exhibit the most varied and luxuriant forms of vegetation. Tree ferns, which are not found at the Andamans, grow in wild profusion along the river banks of Great Nicobar, where they frequently attain a height of forty to forty-five feet.

The waters which lave these shores possess that extreme clearness and depth of colouring which is generally observable in the region of extensive coral reefs.

Of the beauty of the coral beds themselves language conveys no adequate idea, yet in order to aid the reader's imagination I would fain quote the graphic description given by Prof. V. Ball, F.R.S., after a visit to these islands. "There were corals, which, in their living state, are of many shades of fawn, buff, pink, and blue, while some were tipped with a magenta-like bloom. Sponges which looked as hard as stone spread over wide areas, while sprays of coralline added their graceful forms to the picture. Through the vistas so formed golden-banded and metallic-blue fish meandered, while on the patches of sand here and there *Holothurias* and various mollusca and crustaceans might be seen slowly crawling."

There are several convenient harbours and many good anchorages at the Nicobars; of the former, the best known are Nancowry and Ganges Harbours, and Campbell and Sawi Bays, the last of which serves, however, only at such seasons of the year when there is no risk of northerly gales.

In some of the larger islands there are navigable channels, and at Great Nicobar rivers which would prove of inestimable value in developing the internal resources of the country.

Several of the Nicobar Islands, especially of the Southern Group, are covered with hills ranging from 600 to 2,000 feet in height,<sup>1</sup> and these—with the exception of Teressa and Bompoka—are clothed from the summit to the water's edge, and particularly near the sea level, with lofty and dense jungle. The northern and central islands are conspicuous for the extensive grass heaths

lowing suggestion in reference to this subject:—"Among the Garos the word '*Nakoba*' is used to denote a free man, and since the country occupied by the Garos extends nearly to Cape Negrais in Arakan, a connection between them and the Nicobarese would seem to be a not unnatural probability."

<sup>1</sup> Viz.:—"Great Nicobar, 2,105 feet and 1,751 feet; Little Nicobar, 1,429 feet and 1,420 feet; Tillangchong, 1,058 feet; Teressa, 897 feet; Katchal, 835 feet; Camorta, 735 feet; and Bompoka, 634 feet.

which cover most of the high land, and these, though pleasing when viewed from a distance, are invariably found in connection with the most sterile soil, consisting chiefly of magnesium and polycistina clay.<sup>1</sup>

Though teak, for which Burma is famous, and padouk, for which that country as well as the Andamans are noted, are absent from the Nicobar forests there are found even in the northern and central islands a variety of useful woods, while in the southern portion of the group timber of great value flourishes, from which a very profitable export trade will possibly hereafter be developed.

I have no doubt that if these islands were to be colonised by an agricultural race such as the Chinese a vast change would soon take place in their condition and commercial position, for the value of the present coconut trade, though by no means inconsiderable,<sup>2</sup> would rapidly sink into insignificance in view of the wealth that might be realised from these rich timber and cane forests as well as from the cultivation of the fertile and hitherto neglected soil of the southern islands<sup>3</sup> the area of which consists of about 390 square miles, or nearly two-thirds of that of the entire Archipelago. It seems merely a question of time for the promising character of these rich lands to be recognised and advantage taken of the opening they offer to the energetic colonist.<sup>4</sup>

The chief drawback to residence at the Nicobars is the malarial fever which prevails more or less at all seasons,<sup>5</sup>

<sup>1</sup> It has been suggested that these grass covered areas are the result of artificial clearing by some of those who formerly settled in the islands. Any one who reflects upon it cannot fail to recognise the existence of some innate cause which determines this peculiarity. An examination of the sources from which the soil is derived reveals the fact that they consist of magnesian clay rocks, which invariably yield a poor soil.—V. Ball, F.R.S., "Jungle Life in India," p. 186.

<sup>2</sup> The estimated annual export in recent years amounts to about five million nuts—valued at 50,000 to 70,000 Rs.—and the local consumption is believed to aggregate about double that quantity.

<sup>3</sup> In the southern islands of the group the rocks are similar to those of the Andamans, . . . . . and hence the forests there as in the Andamans are not broken by bare spaces."—*Vide* "Jungle Life in India," p. 215.

<sup>4</sup> In his brief reference to the island of Great Nicobar, Père Faure (1711) wrote:—"On y trouve de l'ambre et de l'étain." Amber proves to be amberggris, and tin has yet to be re-discovered; none of the natives are aware of its existence, or indeed of any mineral deposits. Judging, however, from the rich tin mines in the neighbouring island of Sumatra and at Perak, there is ground for hope that on this point the old writer's statement may some day be proved correct.

<sup>5</sup> The variation of temperature throughout the year is even less than at the Andamans: the maximum registered in the shade is between 93° and 94° and the minimum 73° Fahr., and the average mean throughout the year 82° and 83°. The maximum reading of the barometer 30·163 and minimum 29·708. The mean range being about ·238. With regard to the rainfall the registers show that the annual average amount corresponds with that at Port Blair (Andamans). There

especially in the vicinity of Nancowry Harbour, and which has proved peculiarly fatal to Europeans and other aliens, though the aborigines themselves are by no means free from its ravages. This evil is doubtless to be traced to the presence of numerous brackish-water swamps, to shallow estuaries, which are partially uncovered at low water, to exposed coral reefs, and to the extensive muddy foreshores that abound in various localities, the foul exhalations from which are sufficient to account for the insalubrity of the islands.<sup>1</sup> The comparative immunity enjoyed by the residents in the present British settlement—although still located in Nancowry Harbour—is, of course, due to the adoption of certain sanitary measures which were beyond the reach of the earlier colonists, who, moreover, did not possess the advantage of a sanitarium within easy access such as is now found at the Andamans; they were likewise ignorant of the benefits to be derived from the use of quinine and other modern prophylactics and were frequently enfeebled through lack of suitable nourishment, and thus were reduced to a condition in which they readily fell victims to the malarial poison.

The improvement which has taken place in late years in the sanitation of the Government station is attributable primarily, it would seem, to the extensive removal of the coral reefs, which surround the promontory on which the colony has been planted, and secondarily to the partial reclamation of the fetid muddy foreshore. No doubt if more labour were available a further considerable improvement might be effected by reclaiming a vast

can be little doubt that the rainfall in the southern group is considerably greater than it is either in the central or northern islands. The rains usually commence early in May and rarely cease before the end of December. The duration of the south-west monsoon may be reckoned from the beginning of May till the middle of October, from which time the winds are variable till January when they are usually from the north-east for about four months. For particulars regarding the rainfall throughout the year the reader is referred to Appendix C, which extends over a period of fifteen years.

<sup>1</sup> "Mr. Leisk who has lived for years in the Cocos Islands, and who is mentioned by Darwin as affording him much information, tells me that when the living coral in the sides of the Lagoon was exposed to the atmosphere by the force of a peculiarly strong trade wind driving back the sea, and rain having fallen at that time, it immediately died and blackened, and gave forth such a stench as to be intolerable, while the fish that were in the Lagoon rose dead to the surface, poisoned by the decomposing polyps. The effect of rain on exposed coral reefs I have seen again and again, and even the natives have noticed that after a shower of rain a coral reef always emits a greater stench. Besides this decomposing living coral, myriads of animals are to be noticed of the class of zoophytes, soft sponges, echinæ of various shapes and sizes, some even gigantic, the length between each angle of the pentagon in one kind being near eight inches, as I have measured, all are incessantly in condition of being produced and dying, and from this decomposing matter of half a square mile in extent I say you have the malaria produced which generates the fever endemic on this part of Blakáng Máti."—*Fide* "On Coral Reefs as a cause of the Fever," by R. Little, Esq., Surg., "Journ. Indian Archipelago," 1848, p. 586.

swamp which exists in the immediate vicinity of the settlement.

With regard to the numerical strength of the aboriginal population, from a census taken in 1884 it would seem that at Car Nicobar,—which is the principal island of the group, and contains probably fully half the entire population,—a decided increase is taking place; while at Chowra, Teresa, and Bompoka, judging from the number of children to be met with, a like result obtains; but in the central and also in the southern portions of the group the strikingly small ratio of the juvenile element denotes a corresponding diminution of inhabitants. A more just estimate can be formed by the following table of the residents I found at the various villages in 1886:—

	Men.	Women.	Male Children.	Female Children.	Total.
Great Nicobar ..	67	51	23	15	156
Little Nicobar ..	35	34	9	6	84
Condul .. ..	19	12	7	4	42
Milu .. ..	3	3	..	..	6
Camorta .. ..	162	152	66	60	440
Nancowry .. ..	91	88	23	19	221
Trinkut .. ..	38	39	12	5	94
Katchal .. ..	114	103	47	50	314
Teresa .. ..	121	119	172	151	563
Bompoka .. ..	18	20	27	26	91
Chowra .. ..	..	..	..	..	700
Car Nicobar ..	..	..	..	..	3,500

Writing in 1844, the Rev. J. M. Chopard, who passed two years at Teresa, estimated the population of the entire group as about 8,000, and stated that the opinion of the natives was significant of the gradual approaching extinction of the race; contrary to the universal experience of modern travellers he feared that, should "Christian civilisation not come to the help of these wretched savages, the time is probably not distant when they will have disappeared entirely." In his estimate, however, he allows 2,000 as the probable number of the inhabitants of Car Nicobar, and 600 as that of Teresa, whereas, according to the census given above, the population of the former island was found to be about 3,500, and that of the latter about 560, or nearly half the total number of inhabitants in the other islands of the group. These discrepancies may partly be explained by the

statement<sup>1</sup> made by some of the oldest residents in the Central Group, who affirm that during the past forty or fifty years they have been visited with epidemics of small-pox and dysentery introduced among them by traders from the Straits and Burma, which have occasioned a terrible increase in the mortality.

The savage character attributed to the Nicobarese for many centuries explains, without need of further comment, the long neglect in attempting the colonisation of these islands, and a few words will suffice to record the ineffectual endeavours which have from time to time been made in this direction. Omitting Koeping, who, in 1647, made a flying visit to the archipelago, and repeated the fanciful story already current, that they were inhabited by men with tails, we have first to notice the mission extending over two years (1711–13) conducted by two Jesuit priests in the southern island of the group, both of whom are supposed to have suffered a violent death at Nancowry. The next settlers were Danes (1754–6), who at first took up quarters on Great Nicobar, but subsequently moved to Nancowry,<sup>2</sup> where for a brief space they occupied the site of our present Government settlement. Twelve years later (1768) some Moravian missionaries settled on the opposite site of the same harbour, where they and others who succeeded them laboured for nineteen years, with the discouraging result that, while not one native was converted, only one out of the twenty-five men who devoted themselves to the work survived the malarious effects of the climate, and he, too, after a residence of seven years was compelled to leave, and never completely regained his health.

On the abandonment of the mission, and with a view to asserting a claim to the islands, the Danes maintained a petty settlement on the harbour for the next twenty years (1807), when they were ousted by the British, with whom their country was then at war, but in 1814 the islands were restored to Denmark and nominally occupied till 1831, when a third mission was undertaken under Pastor Rosen with no better results than heretofore, and it too was abandoned in 1837. Nine years later another futile attempt was made by the Danes to colonise

<sup>1</sup> Some support to this statement is afforded by the fact that several old village sites are no longer occupied, and all are very sparsely inhabited, a few only numbering 40 inhabitants. Further confirmation is found in the statement that in 1839 40 men (presumably Europeans) of the whaling vessel "Pilot" were attacked and overpowered, no fewer than 35 of their number being killed by the natives on the north-eastern side of Camorta, whom they had provoked by interfering with their women. Such an occurrence argues a condition of natives in respect to numbers far different from that to be found at the present day, except at such thickly populated islands as Chowra and Car Nicobar.

<sup>2</sup> The site occupied by the Government Settlement in Nancowry Harbour has long been known to the Nicobarese as Kinlâha. This name is said to have been given it by the former Danish occupants.

the islands, but again after a two years' trial, it was relinquished and the settlement broken up. The group, however, still nominally belonged to Denmark until formally ceded by her in 1869, in accordance with the desire expressed by the British Government to take over the islands for the purpose of establishing a settlement there for the protection of trading and other vessels, by the suppression of the piratical acts by which the Nicobarese had for years past been gaining for themselves an evil notoriety.

The establishment of our colony has completely attained its primary objects, and has also been the means of attracting a regular and growing trade, and of enlightening the natives a little as to the benefits and resources of civilisation; and though one is compelled to regret the introduction of some of the evils which seem inseparably connected with advance in civilisation, yet it cannot be asserted that their contact with Europeans during the past nineteen years has had any prejudicial effect, either morally or physically, upon the race.

In studying the aborigines of the Andamians and those of the Nicobar Archipelago, the most casual observer could hardly fail to be struck with the wide distinctions which exist, not only in their language and physical characteristics, but also in their culture and customs. While the Andamanese, in spite of their many excellent qualities, must be regarded as one of the most degraded and barbarous races in existence, the Nicobarese, especially of the northern islands, prove themselves worthy to be ranked almost on terms of equality with their kinsmen inhabiting the Malayan Peninsula, and evidence is not wanting to show that they are capable of acquiring and *surviving* a higher degree of civilisation than that which they have as yet attained.

Before considering the affinities of the Nicobarese with existing races in neighbouring lands it will be well to explain that the inhabitants of these islands are divided into two groups, viz., the (so-called by way of distinction) coast people, who are found on all the twelve inhabited islands; and the inland tribe, known as Shom Pen, who are confined to the interior of the one large island called Great Nicobar. The Shom Pen have been—and I believe with good reason—accepted as the pristine indigenes, and their remote origin and purity of breed is apparently beyond question, while the various sections of the coast tribe, although differing from each other according to external influences and other circumstances, are without doubt descended from a mongrel Malay stock, the crosses being probably in the majority of cases with Burmese, and occasionally with natives of the opposite coast of Siam, and perchance also in remote times with such of

the Shom Peñ as may have settled in their midst;<sup>1</sup> the fact that the Shom Peñ present Mongolian affinities would thus to some extent account for the frequent occurrence of the oblique eye in a more or less marked degree throughout the group.

As mentioned in a previous paper read before the Institute in December, 1885, the inference which I have ventured to draw from all the information and facts which have come to my knowledge is, that the circumstance of the presence in modern times of the Shom Peñ in one island only of the group is probably due to the extermination of those of the tribe who held aloof or remained hostile at the other islands, which from their small size and extensive grass heaths, would afford scant shelter or sustenance to fugitives.<sup>2</sup> It may also be that those who chose to cast in their lot with the invaders were spared, a supposition which is seemingly confirmed by the slight measure of kinship which is found to exist at the present day between the sections in the southernmost part of the group.

The information obtained in the course of at least two years' subsequent research among the Shom Peñ, while confirming the statements made in the paper already referred to, has added little matter of fresh interest to be communicated at this time; a description will there be found of their general appearance and mode of dress, of their huts and sack-like cooking vessels of bark, and of the neatly made wooden spears (*henyūan*)<sup>3</sup> which are their sole weapons of offence as well as of defence. The abandonment of their encampments by the Shom Peñ appears to be invariably a temporary measure, whether occasioned by a death or arranged merely for the purpose of procuring the fine cane, honey or other jungle produce which they barter with the coast people for such articles as they cannot otherwise obtain. Through this means intercourse between the two sections is gradually extending, and its influence is already observable in the superior construction of the huts by those members of the inland tribe who have been most thrown in contact with the coast people; two huts in particular I observed at Dakan-kat on the border of the Alexandra River (*Dák-onaing*) and another

<sup>1</sup> Cases of connections with natives of India or other Asiatics appear extremely rare.

<sup>2</sup> While the negritos of the Andaman Islands, like the giant forest trees of their country when deprived of the shelter of the surrounding jungle, invariably succumb from the effects of exposure in our clearing, there is no reason to suppose that the same fate would overtake the Shom Peñ if similarly circumstanced, for these although accustomed to live in small clearings surrounded by jungle are apparently sufficiently robust to withstand any harmful results from such a change of life and surroundings.

<sup>3</sup> These are made of Areca wood, and the head is pointed and jagged in such a way as to serve the purpose of barbs.

about two miles further inland, both of which evidenced in every part a neatness and finish which is entirely absent from the rude dwellings of most of the villages belonging to this tribe.

As some writers have gone so far as to question the existence of any affinity between the Nicobarese and the Indo-Chinese family it seems desirable to point out certain facts and ethnic characters, which, taken into consideration with the *primâ facie* evidence afforded by the general physical resemblance of the inhabitants of the various sections of the group to Malays or Burmese, or to what may be described as a cross between the two, leave no room for further doubt or hesitation on the subject.<sup>1</sup>

I. We find that the Nicobarese invariably erect their dwellings on piles, according to the custom which prevails from the frontiers of Tibet to the islands of the South Sea; while even among those natives of India who inhabit a marshy country this practice is never adopted.

II. The wilful staining of the teeth by the constant use of *pân*, without subsequent cleansing, is a habit they share with nearly all the races of Transgangetic India and the Archipelago.

III. The practice of perforating the ear-lobe and carrying wooden cylinders in the aperture for the purpose of ornament is a custom as universal among the Nicobarese as among any of the numerous tribes inhabiting the territories between and inclusive of Assam and Borneo.

IV. The artificial deformation of the head by flattening the occiput and forehead in infancy as practised by the natives of the central and southern coast tribes is described as one of the customs of certain tribes in Borneo and the Malayan Peninsula, while it has no place among the institutions of any of the various races of Hindustan.

V. The Nicobarese entertain the same general aversion to the use of milk as an article of diet which is found to be common to the various races of Indo-China and the Archipelago.

VI. The weakness or "brittleness" of the marriage tie and the facility of divorce have been described as a "feature common to the delineations of most of the tribes of Indo-China and the Indian Archipelago," and as presenting a striking contrast to the respect for the marriage bond shown by natives of India. Among the Nicobarese, as among the Dayaks of Borneo, many husbands have changed their wives three or more times before

<sup>1</sup> See Col. Yule's "Notes on Analogies of Manners between the Indo-Chinese Races and the Races of the Indian Archipelago," "Journ Anthropol. Inst.," February, 1880; and "British Burma and its People," by Captain C. J. F. S. Forbes.

finding the partner with whom they are willing to pass the remainder of their days.

VII. The singular custom known as "couvade,"<sup>1</sup> or paternal lying-in, which is one of the institutions of the Dayak, and inferentially may be taken as existing among other Malay tribes which have as yet been but imperfectly described, is practised by all the communities at the Nicobars, including the inland tribe of Great Nicobar; it is by them regarded as a custom of remote antiquity and is called "*otó*" in the dialect of the Central Group.

VIII. Here too as among the Burmese and Malays affection towards infants and between lovers is betokened by sniffing the face and not by kissing with the lips.<sup>2</sup>

IX. In their social life and manners the Nicobarese differ from the generality of Asiatics and resemble the Burmese in being free from caste prejudice; in frankly yielding to the superiority of a European; in not fawning on persons of superior culture or position; in regarding discipline or any continued employment as most irksome; and—in the case of the more advanced natives of Car Nicobar—in being inquisitive and eager for information and readily fraternising with strangers. All seek the society of their fellows without restraint, and their social gatherings are enlivened by the presence of their wives, sisters, and sweethearts, with whom they mix on equal terms, like the Burmese. They, moreover, resemble the Burmese and differ from the natives of India in speaking without hesitation of their wives and families.<sup>3</sup>

X. The Nicobarese belief in spirits called *iwi* (or *siya* as they are named at Car Nicobar), who cause sickness and death unless propitiated and scared away, corresponds with that of the Burmese in *náts*. A like agreement between the Nicobarese and one or other of the various sections of the Burmese race is found in the practice of placing money either in the mouth or against the cheek of a corpse prior to burial in order that it may benefit the spirit on its arrival in Hades, and in the custom of making offerings at the funeral and at the subsequent memorial feasts in order to gratify and propitiate the departed spirit.

XI. Some minor analogies between the customs of the Nicobarese and Burmese might be pointed out, viz., while the Burman observes four days of worship in every month, i.e., the eighth day of the waxing moon, full moon, the eighth day of the waning moon, and the last day of the last quarter, the native of

<sup>1</sup> See Yule's "Marco Polo," Vol. II, p. 52.

<sup>2</sup> Hence described by Wallace as the "Malay kiss."

<sup>3</sup> See Yule's "Embassy to Ava," p. 251, and Forbes' "British Burma," pp. 70 and 136.

Car Nicobar regards the first three of these days as a holiday (*andila*) on which no work may be undertaken; the Burmese and Talein courting customs, as described by Forbes, accord with those in vogue at the Nicobars and more especially at Car Nicobar; the Burmese love of sport and amusement such as canoe-racing, feats of agility and strength, and skill in dancing, singing, etc., is equally shared by the Nicobarese among whom wrestling, skipping, and stick-fights take the place of the Burmese sparring and football matches; the eating of dogs' flesh, again, which is so generally associated with certain of the Indo-Chinese races, has been practised by the Nicobarese from remote times, though now-a-days the custom is confined almost entirely to the natives of the single island of Chowra.

XII. Although, in seeking to establish proofs of racial affinity, rather than of mere social contact, but little dependence can of itself be placed on the test afforded by linguistic affinities, it is not without interest to point out that the remarkable idiom of speech known to grammarians as numeral affixes or auxiliaries, which is so universally characteristic of the various Indo-Chinese languages, is a striking feature of all the dialects spoken in the Nicobar Islands, while sundry other peculiarities might be enumerated indicating such affinities to the Malay and Burmese languages as cannot but be regarded as possessing some significance when supported by the foregoing evidence, all of which tend to establish the kinship existing between the tribe under consideration and the Indo-Chinese family.

Finally, it may be further urged as arguing a bond of kindred between the Nicobarese and the Malayo-Burman races that while the former entertain no objection to marriages of their women with Malay, Burmese, or Chinese, only one or two instances can be discovered of unions between Nicobarese and Hindoos and others; indeed the very idea of such alliances is almost repugnant to them, as is borne out by the observation more than once made to me when discussing the subject with natives of Car Nicobar, "he 'nother kind man."

**Form and Size.**—In spite of a general resemblance between the inhabitants of the various islands of the group, certain distinguishing peculiarities are readily noted by the careful observer after a residence of any duration in their midst, and I have frequently tested the accuracy of my observations by naming correctly the respective localities to which individual members of a mixed party of Nicobarese belonged.

It is curious as one passes from the almost squalid hamlets of the South—whose few and slothful and apathetic inhabitants are scarcely to be roused by the rare event of a vessel arriving

in their waters—to note the gradual change in the habits and prosperity of the several communities as one island after another is passed in a northerly direction, till when Car Nicobar is at last reached comparatively densely populated villages are found, whose busy and energetic people have secured to themselves an annual export of two or three millions of coconuts besides the profits arising from the sale of pigs, poultry, fruit, and vegetables to the numerous vessels which touch here for trading purposes.

In the various statements<sup>1</sup> which have been published during the past hundred years or so regarding the Nicobarese, there is a more general agreement concerning their leading characteristics than is often the case with such accounts.

Mr. N. Fontana (1778) describes them as being “of a copper colour, with small eyes obliquely cut, with small flat noses, large mouths, thick lips and black teeth; well proportioned in the body, and rather short than tall, with large ears; . . . the women are of the same colour and very small in stature.” Lieut. Colebrooke (1790) informs us that “they are in general robust and well-limbed, and in features resembling Malays, whom also they approximate in the matter of colour; he further tells us that the women are much inferior to the men in stature, though they are more active in all domestic matters.” Mr. G. Hamilton (1801) writes much to the same effect, adding, however, a stricture on the extreme ugliness of the women.

In 1846, Père Barbe, an observant writer, remarked “that it is difficult to have an accurate notion concerning the origin of the Nicobarians. They have projecting cheek-bones, flat visages, flattened noses, scanty beards, straight black hair, and Chinese eyes. Their complexion is dark olive, they are corpulent, muscular, and well-made, but their legs are rather short in comparison with the trunk, the lower extremity being more developed than the upper one:” he adds that “they appear to hold some relation to the Malays,” and expresses his belief that “they may belong to the same race of people who formerly lived on the seashore of Sumatra.”

Dr. Rink, writing in the same year (1846), speaks of their “low stature, their powerful although coarse form of body, with broad feet, strong limbs, broad shoulders, short neck, their broad face, with flat nose, large mouth, and prominent jawbone, and finally the brown (passing somewhat into a copper-red, but at the same time very uniform) colour of their skin would incline one coming from the more civilized parts of India to believe that one had arrived at the territory of a new race of men, for in vain

<sup>1</sup> *Vide* list of writers, p. 45.

would he look here for the noble features, the expressive look, the slender and graceful stature, and the pleasant demeanour of the Hindoos . . . this may serve as an example of the gradual transition of the Mongolian race through the Indo-Chinese into the Malayan." Dr. Rink, elsewhere, speaking of the Nicobarese women, describes them as "of large stature and strong constitution." In general agreement with the last quoted writer are the comments made on this race some 23 years subsequently by Prof. V. Ball, F.R.S.

From careful measurements taken of 150 to 200 individuals of both sexes at the various islands I found that the average height of the males is 5 feet  $3\frac{3}{4}$  inches, while that of the females is 5 feet, a result which disproves the statement of certain of the earlier authors whom I have quoted regarding the disproportion between the sexes.

It was also found by measurements taken of males that—with one exception—the *grande envergure*, or extreme span of the arms, extended at full length like a cross, exceeded considerably the height, sometimes to the extent of 5 inches, and never less than half or three-quarters of an inch, the average being about 3 inches in excess of the stature;<sup>1</sup> no such striking divergence in this respect was found among women; in one case there was a difference of 4 inches in the *envergure* over the height, and the average difference seems to be about  $1\frac{1}{2}$  inches.

The distance of the extremity of the middle finger in the ordinary vertical attitude from the upper border of the patella, the muscles of the thigh being flaccid, was found to range in males between 3 inches and  $7\frac{1}{2}$  inches, the average being  $5\frac{1}{4}$  inches; while in the few women who were examined, and who were of medium stature, the average was much the same.

On comparing the distance of the middle finger above the upper border of the patella with the stature as 100 in each individual measurement, among the men the index  $8\frac{1}{2}$  will be found to represent the average distance.

In respect to the inland tribe of Great Nicobar (Shom Peñ) the measurements which have been taken go to prove that they average about an inch less in height, and are less robust in physique, than the coast tribes; they commonly have protuberant bellies, and an anæmic complexion, which is doubtless due to the insanitary condition of their dwellings and encampments, and to their unwholesome diet.

As I have already stated, the strong Mongolian affinities of the Nicobarese is borne out repeatedly by similarities both in

<sup>1</sup> This relatively to stature = 1000 would be represented by the index 1047 which closely approximates the results obtained among Europeans (see Topinard's "Anthropology," p. 334).

their constitution and culture; in the central and southern islands—where alone the occiput is flattened—the Malay element is easily recognised, while in the northern portions of the Archipelago, especially at Car Nicobar, a Burmese strain is observable. (Pl. XX).

The chief characteristics of the race, as they strike me, may be summarised as follows: the forehead is well-formed, the eyes are usually more or less obliquely set, the nose is wide and flat and is only in a few rare instances aquiline; the complexion of the majority of these natives is of a yellowish or reddish-brown tint, the cheekbones are prominent, and the features, though somewhat flat, are less markedly so than is commonly seen among the Malay races. Such appearance of prognathism as prevails in these communities, which may be considered as of unmixed origin, must be traced in part to the prolonged period of lactation, and subsequently to the habit of constantly sucking the green coconuts, as well as to the betel-chewing custom, which as mentioned in another place, produces a habit which has in time the effect of forcing forward the incisors of the upper and lower jaw till they protrude to an extent that is in many cases almost revolting. Judging from lads and children the lips are naturally of fair size and shape, though the mouth is commonly very large.<sup>1</sup> The ears are of medium size, but the lobes are almost invariably disfigured by the practice, which prevails also among the Burmese, of perforating them and inserting by way of ornament wooden or cane cylinders or even discs, measuring sometimes as much as an inch in diameter.

In spite of their general muscular development, there is lacking in the physique of the Nicobarese that grace of outline which is so pleasing to the eye; the inward curve of the waist is scarcely noticeable among them, while the sharp bend in the back (*vide* profile Pl. XX), in most instances further mars that harmony of proportion which is essential to the perfection of the human form.

The superior development of the lower limbs in these aborigines, as compared with the natives of India is often very striking, and is clearly attributable to the early and constant practice of climbing coconut trees, whereby the muscles of the thigh and calf are continually called into play. The feet and hands of these tribes are not abnormally large; the former are, however, inclined to be broad and flat, the heel very rarely projects, and then only to a very slight extent; if, however, it be contended

<sup>1</sup> It is very generally remarked by visitors that the children are often extremely nice-looking, but as soon as they commence the habit of betel-chewing all traces of beauty disappear; the age at which they usually commence betel-chewing is 8 or 9, though sometimes it is seen in little ones of 4 and 6.

that the feet should bear the same ratio to the height that 14 does to 100, the average length of the Nicobarese foot would appear to exceed the correct limit.

In eighteen instances out of thirty-five examined it was found that the second toe was longer than the big toe, in thirteen more they were both of the same length, while in the remaining three individuals the big toe was the longer. Again in sixteen persons out of twenty the third finger proved longer than the first, and in the rest both were of the same length.

In a large number of individuals examined at the various islands it was found that the space between the pupils of the eyes averaged  $2\frac{3}{8}$  inches, a result somewhat in excess of the measurements of several Europeans who were similarly examined.

For convenience of reference the results of the measurements taken of 150 to 200 natives at the various islands are subjoined :—

*Height.*

	Maximum.	Minimum.	Average.
	ft. in.	ft. in.	ft. in.
Men .. ..	6 0*	4 9	5 $3\frac{1}{4}$
Women ..	5 6	4 9	5 0

\* Very exceptional, two only, both at Chowra, and both thin and of inferior physique; the majority are between 5 feet 3 inches and 5 feet 5 inches. Very few attain or exceed 5 feet 7 inches. These remarks apply equally to all the islands.

Height seated (of men) was found to average 2 feet  $9\frac{1}{2}$  inches which is thus shown to be 2 feet  $6\frac{1}{4}$  inches less than the average height; the height of the fourchette of the sternum above the ground, the individual being seated on the ground, with the trunk upright, and breathing quietly, was found to average :—

In men .. ..  $22\frac{3}{4}$  inches.  
In women .. ..  $21\frac{1}{8}$  „

*Girth round Chest.*

	Maximum.	Minimum.	Average.
	ins.	ins.	ins.
Men .. ..	$42\frac{1}{2}$ †	30	$34\frac{1}{4}$

† This was very exceptional, the next greatest girth, 39 inches, was only found twice, and it is doubtful whether ten men of equal girth could be found in the entire group.

The circumference of the chest relative to the stature is thus shown to average 54.1, which closely corresponds to the ratio among Englishmen as quoted by Dr. Topinard (p. 404). The play of the chest, *i.e.*, the difference between the two circumferences taken during inspiration and expiration, was found in men to average  $1\frac{1}{4}$  inches, and in no case did it exceed  $2\frac{1}{2}$  inches:—

*Weight.*

	Maximum.	Minimum.	Average.
	lbs.	lbs.	lbs.
Men .. ..	210*	102	136
Women ..	158	90	118

\* This too is exceptional, only two men have been observed over 200 lbs.; a few others noted weighed respectively 181, 170, 163 lbs.

*Girth of Waist.*

	Maximum.	Minimum.	Average.
	lbs.	lbs.	lbs.
Men .. ..	35 ¶	28	$30\frac{1}{2}$

¶ Unlike the Burmese, corpulency is not admired by these islanders.

*Thigh.*

	Maximum.	Minimum.	Average.
	ins.	ins.	ins.
Men .. ..	$25\frac{1}{2}$ §	18	$19\frac{1}{2}$

§ This and one other of 24 inches were isolated cases.

*Calf of Leg.*

	Maximum.	Minimum.	Average.
	ins.	ins.	ins.
Men .. ..	$17\frac{1}{2}$	$12\frac{1}{2}$	$14\frac{1}{2}$

|| Only one instance; many were found to measure between 15 and 16 inches.

The superior development of the Nicobarese in this respect as compared with natives of India is often very striking and is clearly attributable to the frequent exercise of the muscles of the calf in climbing coconut trees.

*The Biceps of Arm.*

	Maximum.	Minimum.	Average.
	ins.	ins.	ins.
Men .. ..	17 $\frac{1}{4}$ †	10 $\frac{1}{2}$	12

† Isolated instance : in no other case did the measurement exceed 14 $\frac{1}{4}$  inches.

Length of arm from shoulder to wrist (men), average, 21 $\frac{1}{2}$  inches.

„ hand, (men) average, 6 $\frac{1}{2}$  inches.

„ leg from hip to ankle (men) average, 34 $\frac{1}{2}$  inches.

„ foot (men), maximum 10 $\frac{1}{2}$  inches, minimum 8 $\frac{1}{2}$  inches, average 9 $\frac{1}{2}$  inches.

„ „ (women), maximum 9 $\frac{1}{2}$  inches, minimum 8 inches average 8 $\frac{3}{4}$  inches.

**Physical Powers and Senses.**—Writing in 1844, after spending two years at Teressa, the French missionary, Rev. J. M. Chopard, commented on the undoubted fine physical development of the Nicobarese, but I feel sure that his statement, that he has seen them “carrying without any trouble two hundred coconuts” must require correction, for this represents a load of nearly 5 cwt. From personal observations and after many enquiries on this subject I am assured that an able-bodied man’s load is three scores of unhusked coconuts or four scores of almost entirely husked nuts,<sup>1</sup> in other words, from 160 to 180 lbs. weight in either case. The nuts are invariably slung in pairs across the two ends of a pole, care being taken to adjust exactly the balance of the load. One man is spoken of as having in his prime carried five scores of husked coconuts, but this is cited as an evidence of his exceptional powers. The loads borne by women average about one-third less than those of men (Pl. XXI).

It is considered a good load to carry twenty pairs of their coconut water vessels (*hishōya*, vide Appendix N, Item 33) each containing from 2 to 3 $\frac{1}{4}$  pints, or about 12 $\frac{1}{2}$  gallons of water,

<sup>1</sup> These nuts are brought from distant plantations for feeding the live stock and their own consumption. A small portion of the husk sufficient to provide a strip for attachment to a second which has been similarly husked is all that is left on the shell, the load is thus considerably lightened and a greater number can be carried than would be possible were the nuts unhusked.

the average weight of the whole amounting probably to about 1 cwt.

Weights are never carried on the head, but are invariably slung on a stick or pole and borne over the shoulder. A woman may occasionally be seen carrying on her head for a few yards, from her hut to the jungle, a basket containing a light load of *Pandanus* drupes, but this is the only instance in which anything is borne on the head: as they are not in the habit of distressing themselves by taxing their powers of endurance, the distance that a man or woman will carry a maximum load without a rest rarely if ever exceeds a few hundred yards; in fact it would appear that though the physical powers of the average Nicobarese exceed those of the average Burman or Malay, there are many tasks performed by the latter from which the former would shrink as irksome and fatiguing.

The only occupations requiring endurance as well as skill, in which they may be regarded as adepts, are climbing coconut trees, and paddling long distances in their canoes, and it is evidently due to their frequent practice in these arts that so many of them possess well-developed frames and muscular limbs.

Their walking powers cannot be satisfactorily determined; a man would consider that he had performed a long walk if he had covered about 15 miles along a fairly smooth undulating path, especially if carrying a load not exceeding 30 lbs., and his average rate of speed for such a walk would under ordinary circumstances be less than 3 miles an hour. Only under very exceptional circumstances would a Nicobarese undertake a walk of over 20 miles, and he would certainly take a short rest after every few (5) miles. Through jungle paths or along a sandy and rocky coast they would never attempt any great distance; women rarely go far from their homes either by land or in a canoe.

As these people are unpractised in running it has not been surprising to find that their performances when competing in foot races at the occasional sports held in the Government settlement, have been below the average of Madras sepoys and Punjábí police, and this refers to flat races of 200 yards only; very few of them could run as far as a quarter of a mile at racing speed, even on a level road. In jumping (whether "high" or "long") their attempts are very poor, and they excel chiefly in "tugs-of-war" and "putting the shot" where their weight and muscles come into full play.

As shown in another section (*vide* Anatomy, etc.) their power of abstaining from food and drink without inconvenience, is, under any circumstances, very small, or at least is never allowed to be strained. Although in regard both to sight and sound they are inferior to the Andamanese, they are yet superior

to Europeans<sup>1</sup> in all matters in which these faculties have been exercised in their semi-savage state. On testing a party of young men with the test paper used in the army for recruiting purposes, I found that while all were well able to count the dots correctly at a distance of 19 yards, which is said to indicate "perfectly acute vision," some could still do so at 22 yards, but this was the extreme at which any degree of accuracy was obtained.<sup>2</sup>

Cases of blindness and of myopia<sup>3</sup> appear to be rare, and to be equally distributed throughout the group.

In order to ascertain their sensitiveness to touch, the points of a compass were simultaneously applied to different parts of the body, the result being that the minimum distance at which the two points ceased to be felt as one, was found to be from half-inch to 1 inch, certain parts of the body being more sensitive than others.

Their sense of smell is by no means defective. I have, however, never observed any special instance in this respect calling for remark. As in the case of the natives of New Ireland, mentioned by Mr. A. J. Duffield,<sup>4</sup> the smell of carbolic acid is particularly obnoxious to them; young men and women are very partial to scents; the former explain that they find its use a certain passport to the favour of their wives.<sup>5</sup>

It has often surprised me to observe how little the sense of taste among the Nicobarese appears to be affected by their constant habit of betel-chewing; they are always able to distinguish any particular flavour in food or drink, and to detect the fact when rum has been given them slightly diluted.

**Anatomy and Physiology.**—In a land of plenty such as theirs the occasion for testing their powers of abstinence from food and drink has probably rarely arisen, and they are so little accustomed to endure any privation, that, except immediately after a meal, when they indulge in a cigarette, there is hardly an hour in the day when they are not taking quids of betel; between meals also they often dispose of the contents of two or more green coconuts or some toddy, and will accept any

<sup>1</sup> From the statements of the coast people, it would seem that the Shom Peñ excel them in these respects as well as in all jungle craft.

<sup>2</sup> It would appear, however, that there is nothing remarkable in this, as I was able to compete successfully with all but one man at the maximum distance.

<sup>3</sup> I once saw an old woman at Trinkut wearing spectacles while engaged in making an ornamental skirt for an approaching festival.

<sup>4</sup> *Vide* "Journ. Anthropol. Inst.," August, 1885.

<sup>5</sup> The scented leaves of a certain creeper (*tenyām*) are sometimes brought home by thoughtful swains on their return from the jungles in order to gratify their sweethearts and wives.

food or liquor which may chance to be offered to them at a friend's hut. When away from home on hunting or fishing expeditions and not ready to return, they will frequently eat raw certain varieties of fish which they may have caught; if no food is obtainable, they bind a cord tightly round the waist, by way of lessening the pangs of hunger. Before starting for a part of the jungle at a distance from any coconut plantation for a few hours' work,<sup>1</sup> they will invariably provide themselves with the necessary materials for betel-chewing, and, if possible, take also a few limes, in order that they may refresh themselves with the juice in water which they will collect and drink out of a large leaf or Areca spathe.

Consequent on the very general practice of betel-chewing the mucous membrane of the mouth is usually so artificially stained that its natural colour is difficult to ascertain; judging from an examination of some lads and children with clean mouths, the membrane appears to be either unstained with pigment, or to be of a light rosy tint; no opportunity has yet occurred to enable me to form an opinion as to the colour of the muscles and fat.

The skin is naturally very smooth to the touch, the result probably of the frequent oiling to which it is subjected from infancy; among the old or middle-aged the skin covering the knee-caps and elbows is loose and wrinkled, but this is easily explained by the common eastern habit of squatting on the heels.

After active exercise they perspire freely: how far it may be peculiar to the Car Nicobarese, I am unable to say, but I have frequently noticed that in this tribe after any violent exertion beads of perspiration appear on the nose; in spite of careful observations among the natives of the other islands, I have never yet come across a like instance of this cause and effect.

In child-bearing it would seem that from the extreme rarity of fatal terminations or of slow recoveries, labour may be regarded as comparatively easy, though not so much so as among such barbarous races as the Bushmen, Kaffirs, and Canadian Indians; the women have abundance of milk, and the two youngest children may constantly be seen together at the breast.

From the fact that the Nicobarese usually rise late and frequently indulge in naps during the day it has been inferred that they can ill bear privation in respect of sleep; but this view must be modified when it is found that these habits are generally the

<sup>1</sup> In the N.E. monsoon the fruit of the *Amomum Fenzlii* (the leaves of which serve as their cigarette wrappers) is eaten on these jungle expeditions, and they then often assuage their thirst—especially in the southern group—by drinking the refreshing and abundant juice contained in the ground rattan (*Calamus rotang*).

result of the previous night having been spent in spearing fish or in dancing and singing at some festival; indeed, on these occasions it sometimes happens that many individuals will keep awake for forty-eight hours at a stretch.

In consequence of the equable nature of their climate the ability of the Nicobarese to endure cold cannot be judged; they are always careful to avoid direct exposure to a hot sun<sup>1</sup> on a sultry day, declaring that thereby they incur a risk of suffering from fever and severe headaches.

The following table furnishes the results of observations made on a party of Nicobarese men and boys in ordinary health while seated in the shade and before taking a meal.<sup>2</sup>

Age.	Temperature under axilla.*	Rate per minute of		Remarks.
		Pulse.	Respiration.	
30	98·4	72	18	* The bulb being left undisturbed for six minutes.
28	99	78	18	
25	98·6	68	16	
24	98·4	78	18	
20	98	78	19	
18	98·4	72	15	
18	98·4	78	17	
17	98·8	68	15	
17	97·2	61	17	
17	99	78	19	
17	97·8	72	15	
16	98·5	75	19	
16	98·2	72	19	
15	99	78	17	
14	98·8	72	17	

**Motions.**—The Nicobarese even from their earliest years are devoid of that natural grace of attitude and motion which seems almost a prerogative of youth, and except under some sudden excitement the most striking characteristic to a stranger would be the sluggish gait and slouched bearing of both old and young throughout the archipelago, even the Car Nicobarese are not exempt from this racial peculiarity, though far in advance of

<sup>1</sup> When photographing a group exposed to the sun, I have almost invariably been requested to do it as quickly as possible that they may suffer no ill effects from the sun: their appreciation of a pith hat is by no means entirely due to their mania for wearing European garments.

<sup>2</sup> The rates of pulse of 11 others who were tested were as follows:—62; 66; 68; 70; 78; 79; 80; 80; 82; 82; and 84.

their compatriots in the other islands both in energy and intelligence.<sup>1</sup>

When the head is in the usual position, a line drawn through the *meatus auditorius* horizontally, is found to pass slightly above the nostril, there seems to be little or no power of moving the ears or scalp, and but little play of feature; they are capable of shutting one eye without closing the other, and can extend one finger without opening the hand.

In walking the body is fairly balanced, the foot firmly planted, the heel being brought to the ground slightly before the rest of the foot, the arms generally hang limply at the side, with the palms of the hands turned inwards, and are swung while the body is in motion; there is an entire absence of spring or elasticity and the whole gait is stiff and ungainly.<sup>2</sup> Both in running and walking the toes are turned slightly outwards.<sup>3</sup>

The legs are rarely fully straightened when standing at ease nor is the body held erect but the whole weight is thrown on one foot, one hand grasps the other arm either across the abdomen or behind the back.

In pointing to any distant object, or place, the arm is generally stretched to its full length, and closing the other fingers with the knuckles uppermost, the direction in question is indicated with the fore-finger. In beckoning a person to approach the arm is held half bent and the fingers are waved inwards keeping the knuckles uppermost.<sup>4</sup>

Both men and women up to middle age are able without effort or practice to touch the ground with their finger-tips and even in many cases with the knuckles without bending the knees.

When climbing a slight pole or slender tree such as the *Areca catechu*, the Nicobarese bend themselves almost double, and walk up with toes turned outwards, like monkeys holding on firmly with both hands. The toes are used for holding or picking up objects, or in climbing ropes, and the great toe is to some extent opposable; in moving any heavy object such as a canoe these natives generally *pull*, and power is in most instances exerted *towards* the body; when two or more persons are engaged in

<sup>1</sup> An explanation once given me by an intelligent native to account for this tribal peculiarity was that it arises from the large consumption of *Pandanus* paste in which they indulge, and which he described as producing a plethoric habit of body.

<sup>2</sup> The attitude in swimming is described under that sectional heading, and the posture of women in accouchement will be given under "Medicine."

<sup>3</sup> The average length of a man's pace is 27—29, and that of a woman 25—26 inches.

<sup>4</sup> It has been noticed by others that "the Nicobarese being endowed with extraordinary lip development are wont at times to indicate place or direction by a marvellous protrusion of the lip."

the same task they appreciate the advantage of acting simultaneously to the accompaniment of the voice, this is especially the case in canoe racing, and in erecting the demon-scaring poles (*kanaiya*) or dragging a canoe over portage.

The only respect in which the Nicobarese are at all remarkable is in the agility with which they can climb coconut, and Areca, as well as ordinary branched trees; in this accomplishment the women are in a measure sharers at all the islands except Car Nicobar, though of late years owing probably to the influence of increased intercourse with foreigners at the Government Settlement in Nancowry Harbour this art is now rarely practised among females in the Central Group especially when strangers are present. Lads of no more than 8 years of age and less, may often be seen at Car Nicobar—where children are numerous and less petted—climbing for nuts as readily as their elders.

Among the men there are two modes of climbing the coconut trees, viz., that which is peculiar to Car Nicobar, and that which is adopted by the other islanders. The former in common with the latter use a fibre loop which is attached round the ankles of both feet, they also grasp the tree by means of a *dha* which they hold at the two ends edge-inwards, this enables the climber to obtain a firm grip of the tree as he proceeds upwards by a succession of springs. Although the Car Nicobarese reckon themselves superior climbers to their southern neighbours, many would be found to dispute their claim, as the mode adopted by the latter strikes strangers as displaying more skill and grace besides presenting greater difficulty of attainment, for with them the hands appear scarcely to touch or grasp the trunk, and nearly all the work is evidently accomplished by means of the legs with which they spring upwards with marvellous facility after the manner of a frog. It is doubtless due to their constant practice of this art that they so commonly possess that stout muscular development of the calves and thighs noticed in another place. Women when climbing use a stout piece of coconut leaf for clasping the tree between the hands after the manner in which the *dha* is employed by the Car Nicobarese men.

In spite however of their agility in the matter of climbing the Nicobarese appear to have somewhat stiff joints, and it would appear almost a matter of impossibility to teach one of them to perform successfully any feat in jumping or gymnastics. They have no tricks of sleight of hand.

**Abnormalities.**—No such deformities occur as sentopygia, and the excessive development of fat about the gluteal region which has been observed as a characteristic peculiarity among Andamanese women is not shared by their neighbours in these islands.

Four cases of hare-lip, and one of polydactylism only are known to the present inhabitants. No instance of albinism, erythrim, excessive hairiness of face or body, cleft palate, absence of teeth or supernumerary teeth have been observed or remarked by those who have been questioned on these points.

Such appearance of prognathism as is observable in certain individuals seems to be due to the prolonged sucking in lactation, to the constant habit of drinking coconut water from the nut, and to the peculiar habit (*vide Deformation*) of removing the shell lime from the thumb when chewing betel by scraping it off on the inner edges of the upper and lower incisors.

**Crosses.**—Connexions between the Nicobarese and other races have, at least in modern times, been of comparatively rare occurrence.<sup>1</sup> A few unions have taken place in recent years between the coast and inland tribes of Great Nicobar, but none of these appear as yet to have been fruitful.<sup>2</sup> One case is known of a union between a Nicobarese woman and an African—this occurred early in the century and must be referred to again—and another with a native of Madras, which took place at Teressa island, the issue being one son, who died on attaining manhood.

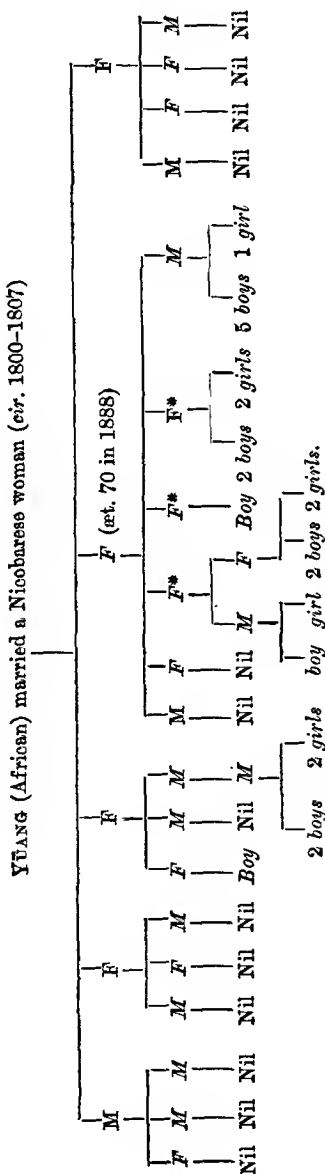
From lack of opportunity, cases of unions with Chinese have been very few and far between. With Burmese and Malays only have marriages been at all frequent, and even such cases have probably at no one time numbered more than 8 or 10, taking all the islands into account.

So far as can be judged from the examples known to us in the vicinity of the Government Settlement the result of these crossed unions does not indicate an increase of fruitfulness in the progeny; the children of the first cross appear to be quite as strong, viable, and long-lived as those of pure blood and in intelligence to be superior. No cases having occurred of unions between individuals of mixed parentage the relative degree of their fruitfulness with each other, and in their crosses with pure blood has not yet been ascertainable. The products of the first cross have been observed to resemble the female more than the male parent. Two return crosses would seem to suffice to restore apparent purity of blood. The characteristic marks of the cross which remain longest are the facial form, shape of the eyes and hair.

<sup>1</sup> So far as is known no cases of inverse crosses have occurred, though there is a rumour at Car Nicobar of a native of "that island having travelled to England and there found a wife, but as nothing more was heard of him he is believed to have died soon afterwards."

<sup>2</sup> It seems probable that, taken as a tribe, the *Shom Pen* will be found to afford an instance of ethnical purity as striking as that presented by the negritos of the Andamans.

The accompanying diagram shows the result of the union above referred to between an African and a Nicobarese woman, also of unions with Malays.



\* With the exception of these three women, all of whom married Malays, the remaining adults married natives of their own or adjacent islands.  
 [[Italics indicate those that are still alive.]

From this statement it will be seen that all the 5 children of the African—one of whom still survives at 70 years of age—became parents, 3 of them having 3 children each, one of them 4, and the remaining one 7 children or 19 in all, of whom 3 only are dead. No fewer than 13 of these have proved childless. Of the remaining 6,

2 have each 1 boy,  
 1 has 5 boys and 1 girl,  
 1 has 2 boys and 2 girls.  
 1 has 1 married son, and 1 married daughter.  
 (who, between them, have 3 sons and 3 daughters).  
 and 1 has 1 married son (who has 2 sons and 2 daughters).

Omitting the husbands and wives of the blood descendants of Yüang,<sup>1</sup> there are thus shown to be alive at the present day:—

Married men.		Married women.		Children.	
Old.	Young.	Old.	Young.	Male.	Female.
8	2	9	1	14	8

**Development and Decay.**—In the absence of statistics, and as far as can be judged by personal observations extending over seventeen years, the average length of life is higher rather than lower than it is among natives of the adjacent continents. This may be explained by the immunity enjoyed by the Nicobarese from the principal causes of mortality in those countries, viz., famine, cholera, typhoid, small-pox,<sup>2</sup> and measles.

The extreme limit of life actually noted is a little over seventy,<sup>3</sup> and probably eighty may be regarded as the maximum ever

<sup>1</sup> It is not clear to what African race Yüang belonged. One reads of "two Caffree slaves" being attached to the small guard that was maintained at Nancowry by the Danes between 1790 and 1807.

<sup>2</sup> As explained under Pathology, this disease, and probably cholera, have been introduced by ship traders on two or three occasions during the present century and a large number succumbed; neither disease is endemic.

<sup>3</sup> It fortunately happens that we are able to ascertain within a few years the ages of many of the old people in and near Nancowry Harbour through the residence in their midst from 1831-34, of a Danish Missionary (Pastor D. Rosen), and who is recollected by many whose ages at that time can be verified by sufficient evidence.

attained ; of those who survive the sixtieth year it appears that fully two-thirds are women.<sup>1</sup>

Old persons are always allowed to reach their natural term of life, and are invariably treated with kindness and consideration by all connected with them. A few instances are known of four generations existing simultaneously in the same family, and in one the great-grandmother, though over seventy, is still an active woman, able to paddle herself across the harbour, and to perform the ordinary domestic duties pertaining to her sex.

The maximum of stature would seem to be reached about eighteen in the case of men, and in women a little earlier, while the general physical development is apparently not attained in either sex till three or four years later. Puberty is attained by the two sexes about the ages of fourteen and thirteen years respectively. The extremes of child-bearing age appear to be fifteen years and forty years ; suckling is in most cases continued until the infant is two years old, unless the mother becomes pregnant.

**Pathology.**—At all the islands pectoral complaints, especially asthma and bronchitis, are very prevalent particularly about the time of the periodical changes of monsoon when malarial fevers also are more rife ; owing probably to the superior physique and greater recuperative powers possessed by the Nicobarese it is found that they usually withstand the effects of these ailments better than the Hindu patients who come under treatment in our hospitals ; it may nevertheless be fairly estimated that a higher percentage of deaths is directly traceable to diseases which are induced by sudden climatic variations than to any other cause.

The remarks made by M. de Quatrefages<sup>2</sup> on this point were forcibly recalled to my mind in the course of a conversation with one of the oldest and most intelligent of the residents in Nancowry ; after informing me that in his youth the population of the Central group was far larger than it is at the present day<sup>3</sup> he proceeded to observe that in his opinion and that of others the marked increase of pectoral disorders, and also of cases of sterility and impotence is attributable to the lessened vitality which has resulted from the epidemics of small-pox and dysentery which have on three several occasions during the past 60 years decimated the villages.

<sup>1</sup> Mr. W. L. Distant, who visited Car Nicobar in 1868, remarked that he observed fewer old men than old women.

<sup>2</sup> Vide "The Human Species," p. 430.

<sup>3</sup> Vide "Development and Decay," p. 384, and "Reproduction," *post.*

M. Fontana writing nearly 100 years<sup>1</sup> ago stated that the Nicobarese were on the whole remarkably free from diseases of all kinds, but that small-pox of a mild type was occasionally met with in the islands; the natives on the other hand aver that only on two occasions have they been visited with the disease. The accounts are somewhat conflicting as to details but it would seem that either a few years before or a few years after the abandonment of Pastor Rosen's mission at Nancowry, small pox (*malv*) was introduced for the first time by a Malay trading vessel with the melancholy result that many hundreds of the aborigines fell victims.<sup>2</sup> Both in the Central and Southern group, and even as far north as Tèressa it is declared that whole villages were depopulated.

The second epidemic occurred about 1856, and was also brought to their shores by a Malay or Burmese vessel which had among its passengers a Nicobarese who was returning from a visit to Penang or Burma where apparently he had contracted the dreaded malady; his indignant and unsympathetic compatriots put him to death for having exposed them once more to the dangers of infection! The precautions which were taken were successful in preventing the spread of the disease, and though the mortality was very great, it was confined entirely to the northern villages of Camorta.

The only other occasion on which the present inhabitants can recall a period of serious mortality was about 2 years after Mr. Rosen's departure, when it appears that the crew of an English barque, which had anchored near the mouth of Expedition Harbour, provoked the natives by molesting their women; watching an opportunity when most of the sailors were on shore a large party of Nicobarese attacked and disabled the vessel, killed all the men who had remained on board. The sailors from the shore saw what was passing, and thinking discretion the better part of valour escaped at once in their boats to return in four days in another vessel with reinforcements and avenged the death of their comrades by burning down all the huts and coconut trees belonging to the inhabitants, who of course fled at their approach. During the absence of the sailors the natives had looted the barque of all the salt meat and other

<sup>1</sup> M. Fontana also asserted that the Nicobarese were entirely free from venereal complaints; such is not, however, the case at the present day, and though it is impossible to ascertain the date of the introduction of these scourges (probably through the agency of the Malay and Burmese traders), it is happily found that the proportion of sufferers in the various islands is very small, and the disease shows no tendency to spread in the terrible manner noticed among the negritos at the Andamans.

<sup>2</sup> A few pock-marked individuals are still to be met in or near Nancowry Harbour.

stores which they greedily devoured with the result that all who had partaken of the feast were stricken with a complaint which is said to have been characterised by a seizure resembling cholera; others speak of it as dysentery, but be that as it may, the majority of those attacked expired after a few hours of intense suffering. Although the epidemic was confined to the villages in Expedition Harbour, and those on the western shore of Nancowry Harbour, the mortality was very great.

The comparative immunity from fever enjoyed by the residents in certain of the islands of the group is evidently due to local causes, and the natives of those localities when visiting Nancowry Harbour succumb as readily to the malaria and suffer as severely as any aliens.

Apart from the miasma arising from the mangrove and other swamps throughout the Central group it must be borne in mind that the general insanitary condition of the Nicobarese villages enhances the danger of enteric fevers, etc., and it is no matter of surprise that even those who from infancy have been exposed to these influences are not inured to them; those among aliens who seem best able to withstand the miasmatic conditions are natives of the Burmese littoral, the climate of which is in many respects similar to that of the Nicobars.

The deadliness of the malaria in these islands will be more readily appreciated when it is known that even at the present day, when every attention is paid to sanitation, few aliens reside there for three months without experiencing its ill-effects more or less severely; it is not to be wondered at that of 25 Moravian missionaries who successively spent from a few days to 7 years in Nancowry Harbour, 13 fell victims to the climate before they could be relieved, and 11 others died soon after their return to Tranquebar; these men must have all lived under the same conditions as the natives, having no means for effecting any sanitary improvements in the site they had selected for occupation.

In spite of the malarial influences and the prevalence of beri-beri in Sumatra and the Straits Settlements, this obscure disease has not yet been recognised in these islands, either among the aborigines or the alien population; this is probably due to the varied and wholesome dietary of the former and the strict sanitary measures which are enforced by Government.

Next to pectoral complaints and fever the disease which is undoubtedly most prevalent at the Nicobars is elephantiasis; the legs—and less frequently the arms—are first attacked, and the worst cases are marked by tuberosities on the feet and ankles from which there is a constant putrid discharge<sup>1</sup> with the excep-

<sup>1</sup> It is of some interest in this place to mention the rare occurrence of a European attacked with this disease, and the circumstances would seem to lead

tion of Chowra, where probably about 20 per cent. of the adults are afflicted with this disorder, the larger proportion of the sufferers are met with in the Central group where also the malarial influences are most rife. At Teressa and communities of the Southern islands, including the inland tribe, cases of elephantiasis are comparatively rare, while the natives of Car Nicobar are, and are said to have been always, entirely exempt. As a possible explanation of the immunity enjoyed by the Car Nicobarese in this respect it may be mentioned that they scarcely ever drink water from their wells, and never except in an almost boiling state, and in very small quantities when indisposed. Water indeed is seldom used at Car Nicobar save for bathing or cooking purposes, for the coconuts which flourish there so abundantly supply them at all times with a refreshing beverage as well as with food.

The anæmic condition of many of the natives in certain parts of the archipelago, notably at Chowra and Nancowry Harbour and its vicinity—where elephantiasis, splenic and liver complaints, tumours, swollen glands and such-like diseases are most common—is apparently traceable in great part to the impure drinking water<sup>1</sup> and in the Central group a further cause may be found in the situation of the villages which usually face an extensive foreshore and exposed coral reefs, while fresh water swamps and decaying vegetation and refuse matter skirt the rear of their habitations.

Cutaneous diseases are not uncommon, but seldom take a severe form, they would appear to be due in most instances to over indulgence in fish, and other heating dietary aggravated by the malarious climate<sup>2</sup>, psoriasis (*heōh*), and pityriasis (*penlah*), are the two forms of this complaint most prevalent in these

to the inference that in the case of a European living under the same conditions as the natives themselves in a malarious district where this disease is endemic, no such length of time as is mentioned by De Quatrefages in the following extract need elapse to render him liable to suffer from this disorder.

In one of his letters written in 1812 (*i.e.*, 25 years after his departure) the Moravian missionary, J. G. Haensel, states, "After I had resided 5 years in the island, my legs began to inflame and swell to a prodigious size. A suppuration took place and till the discharge commenced I suffered excruciating pain."

[Extract from "The Human Species," by A. de Quatrefages, p. 426. "At Barbadoes. . . . whites of *European origin* have as yet escaped. The elephantiasis of India is found in Ceylon. There again it only attacks natives, creoles, and individuals of mixed blood. Hindoos and Europeans, strangers in the island, are exempt from it. Scott . . . states that only one case of this disease had been observed in a European white, but this individual had inhabited the island for 30 years; acclimatisation had been carried so far in his case as to cause him to lose his "*ethnological immunity*."]

<sup>1</sup> Four cases of goitre (2 males and 2 females) have been observed which may not improbably be due to the impure water.

<sup>2</sup> This is not the opinion of the natives: both diseases affect permanently the colour of the skin. It should be added that leprosy is unknown in these islands.

parts, the former, which owing to the irritation characterising it is most disliked, is attributed by the natives to bathing in impure and stagnant water, and those so affected are required to perform their ablutions in the sea, in order that they may not contaminate the bathing-place of the rest of the community. The general immunity from diseases of this nature enjoyed by these islanders is attributable it would seem to their habit of constant bathing, and to the free use of coconut oil, which they apply freely to their bodies as well as to their hair.

Hunchback and lateral curvature of the spine, as might be expected are seldom seen, two cases only having come under my notice. Epilepsy also is almost unknown; no authentic instance of insanity occurring in their midst has come within the ken of the present generation, and only one or two tales of a legendary kind are to be found in support of the opinion that a few such cases have really occurred. How far their exemption is due to their avoidance of consanguineous marriages, or is to be accounted for on the principle that an organ which has little work to perform is less liable to become deranged than one which is worked under high pressure, is a question I must leave to the consideration of others.

As among other tribes similarly circumstanced the first 5 years of a child's life are regarded as the most critical, after that period it is reckoned that the probabilities are in favour of the little one reaching man's estate.

With the exception of those living in malarial districts who take little out-door exercise, or indulge freely in the use of *tari*, or who from any other cause possess enfeebled constitutions, the bodily recuperative power of the Nicobarese appears on the whole to exceed that of the average European; this opinion is based on observations made in cases of severe injuries caused by shark-bites, falls, cuts, etc.; in every instance the wounds healed so rapidly as to create surprise among aliens although the sufferers were invariably treated by their own medicine-men whose knowledge of the healing art is very limited.

The colour of deep cicatrices is whitish, while superficial ones are darker than the adjoining skin; it is common to see men severely scarred by injuries received when climbing trees, from stick-fights, or from accidents, incidental to the occupations of their daily life.

**Colour.**—In a description of the Nicobarese written in 1869 by a medical officer who had served some years in the Straits of Malacca it is stated that "they have clean healthy skins of different degrees of darkness, some as dark as a Malay and others of an olive colour." In order to ascertain which shades

of colour predominated among them I have examined a large number of individuals at all the islands with the aid of M. Broca's standard tables, the result of which is that I found the colour of the skin of the face and chest of the majority tested to register 30 or 43 more nearly than any of the other types, while the exceptions were noted as between 29 and 30, 30 and 43, and 28 and 35 respectively; a few cases were represented as 29 or 40, or between 40 and 45,<sup>1</sup> these differences were found to be almost equally marked at all the islands, except Teressa, Chowra, and among the Shom Peñ, where the darker hue prevails, and cannot therefore be described as tribal characteristics.

The colouration of the skin pigment of the face, chest, back, arms, and thighs differs in a more or less marked degree in each individual, it being usual to find the two former of a distinctly lighter shade than the last three. I found, however, in one case that while the skin of the chest registered between 29 and 30, the neck 40, and the thighs and back between 29 and 43, the face was darkest of all, viz., between 28 and 35. In examining the inland tribe I found that the chief difference between them and the coast people is that the reddish-brown hue so frequently noticeable in the colouration of the skin in the latter is wanting in the former. The characteristic tint of the Shom Peñ is a dull brown and in the majority of cases the skin has not the healthy appearance which distinguishes the coast people.

Headmen and their families do not differ from the rest of the community in respect to colour; their position is due to superior intelligence and not to the mere accident of birth.

According to their own statements the darker-skinned among them are better able to endure exposure to heat than the rest, and there seems to be ground for this opinion; the lighter coloured skins are, however, very generally preferred, and I have known a woman who was admiringly described as the "white widow," whose face proved nevertheless to be several shades darker than that of an ordinary Chinaman. The colour of the iris among these people I found in the majority of instances to be either 1 or 16 or between those numbers, a few came between 1 and 2 or 16 and 17 and in one I noticed a thin edging of a bluish tint.

Except at Car Nicobar, Chowra and Teressa where, from the common practice of having separate huts for cooking purposes the dwellings are comparatively free from smoke, frequent cases may be noticed in which the exposed portion of the sclerotics is discoloured and appears inflamed, while the upper

<sup>1</sup> In several cases of those who have a sallow, yellowish skin, it is found that the colour is not natural, but due to some skin disease, probably psoriasis, the result of over-indulgence in a fish diet.

and lower parts covered by the eyelids are found to be of the normal white colour.

It does not appear that the varieties in the colour of the eye correspond in any way to those of the skin and hair.<sup>1</sup>

**Odour.**—The peculiarities of odour which distinguish the various tribes and which are naturally more noticeable after taking violent exertion do not appear to be dependent on age or sex, and as the ordinary diet of the natives at the different islands differs in no essential particular, this distinction is probably due chiefly to the character, and more or less frequent use of the unguents they severally employ; the women, however, who pass most of their time at home cooking food, preparing Pandanus paste, and attending to the pigs and poultry emit an odour after engaging in these avocations which is sufficiently marked to distinguish them from the men.

Those among the Nicobarese who indulge in frequent bathing—the majority profess to bathe daily—and the few who take some pride in their personal appearance are not disagreeable at close quarters, as the only odour noticeable about them is due to their constant habit of betel-chewing, which, however, is not offensive to the olfactory nerves.

The natives themselves declare that they can distinguish a member of each of the six tribes of the Archipelago by his odour, but I have been unable to verify this statement; the peculiarity they affirm to be most readily detected in the natives of Chowra, whose presence is declared (and with justice) to be especially obnoxious, a fact which they attribute to the custom prevailing in that island of eating dogs.

**Teeth.**—In the majority of cases the teeth which are first cut are the lower incisors, but no notice is taken of exceptions to this rule; the first dentition is apparently completed about the second year. Even in those well advanced in life the teeth are remarkable for their regularity and freedom from caries, a fact traceable probably to the ample supply of appropriate nutritious food from earliest childhood, as well as to the universal habit of betel-chewing, and the healthy lives led by the people on the sea coast. But for the adverse influence of malaria among those living in localities where fever is endemic cases of dental caries would probably be almost unknown.

In the middle-aged it is noticeable that the molar tubercles are considerably worn down; as they are not accustomed to eat tough food this is evidently to be explained by their constant practice of chewing betel-nut and quicklime. The unpleasant

<sup>1</sup> One exceptional case should be cited of a man having hazel eyes—between Nos. 2 and 3 of Broca's paper—whose hair and skin in no way differed from the majority.

appearance of the mouth, which is caused by this habit, will be enlarged upon in another place (*vide Deformation*).

The canines are not prominent, and it is very rare to find—on the posterior molars—more than five tubercles, and these indeed are only to be observed in youths and those least addicted to betel-chewing; in all others the crowns of these teeth are so abraded as to present an even surface.

From about fifty years of age the teeth usually begin to loosen, and it is not at all unusual to see persons, who, having reached their sixtieth year, are found to possess but few teeth. This loosening may be attributed to the betel-chewing, which, though it seems to preserve the teeth from decay, yet has the effect of unduly exercising the muscles of the jaw, and thereby enlarging the teeth sockets.

**Hair.**—From infancy to the age of puberty<sup>1</sup> the colour of the hair darkens to a marked degree, although among children it is not uncommon in transmitted light to discover traces of yellowish-brown, the natural colour in the adult when examined in the same way proves to be of a dark rusty brown. In its usual oiled state<sup>2</sup> it looks almost jet black but is found to be really so only in comparatively rare instances. The Nicobarese hair retains its colour to a fairly advanced age, and several persons who are known to be over fifty show no signs of becoming grey; two or three individuals of the race are known who have completely white hair and these are believed to have attained the allotted span.

Speaking generally the Nicobarese may be described as having straight hair, though not a few have wavy, and others again are able to boast of natural ringlets; it is fairly abundant, and when allowed to grow, attains a length occasionally of some 20 inches, but seldom more; the roots spring uniformly over the scalp and not in tufts. Its chief characteristic appears to be its extreme toughness. Hair on the face is seldom seen, and then only growing scantily; such individuals are usually further distinguished from their fellows by having more or less hair on their chests, arms, and legs, and they not uncommonly become bald in middle life;<sup>3</sup> from repeated enquiries and careful observations there appears no reason to suppose that these persons are of a different origin to the rest of the tribe or that their peculiarity in this respect is due to mixed parentage. Except

<sup>1</sup> Specimen locks of hair have been cut from the heads of members of the coast and inland tribes, and forwarded to England for microscopic examination.

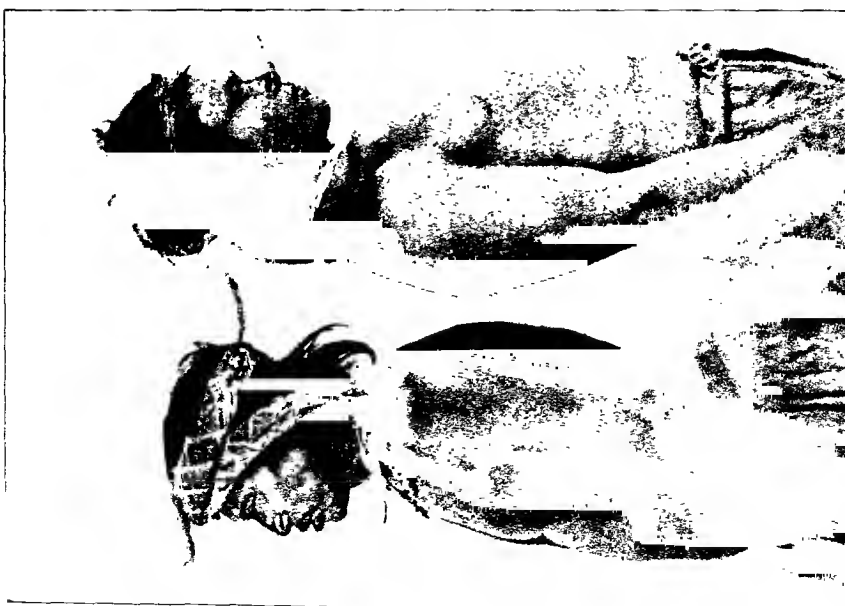
<sup>2</sup> The practice of oiling the hair is discontinued as soon as it commences to turn grey.

<sup>3</sup> Baldness among females appears to be extremely rare.





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BEHR, YEE & SONS, PHOTO TINT

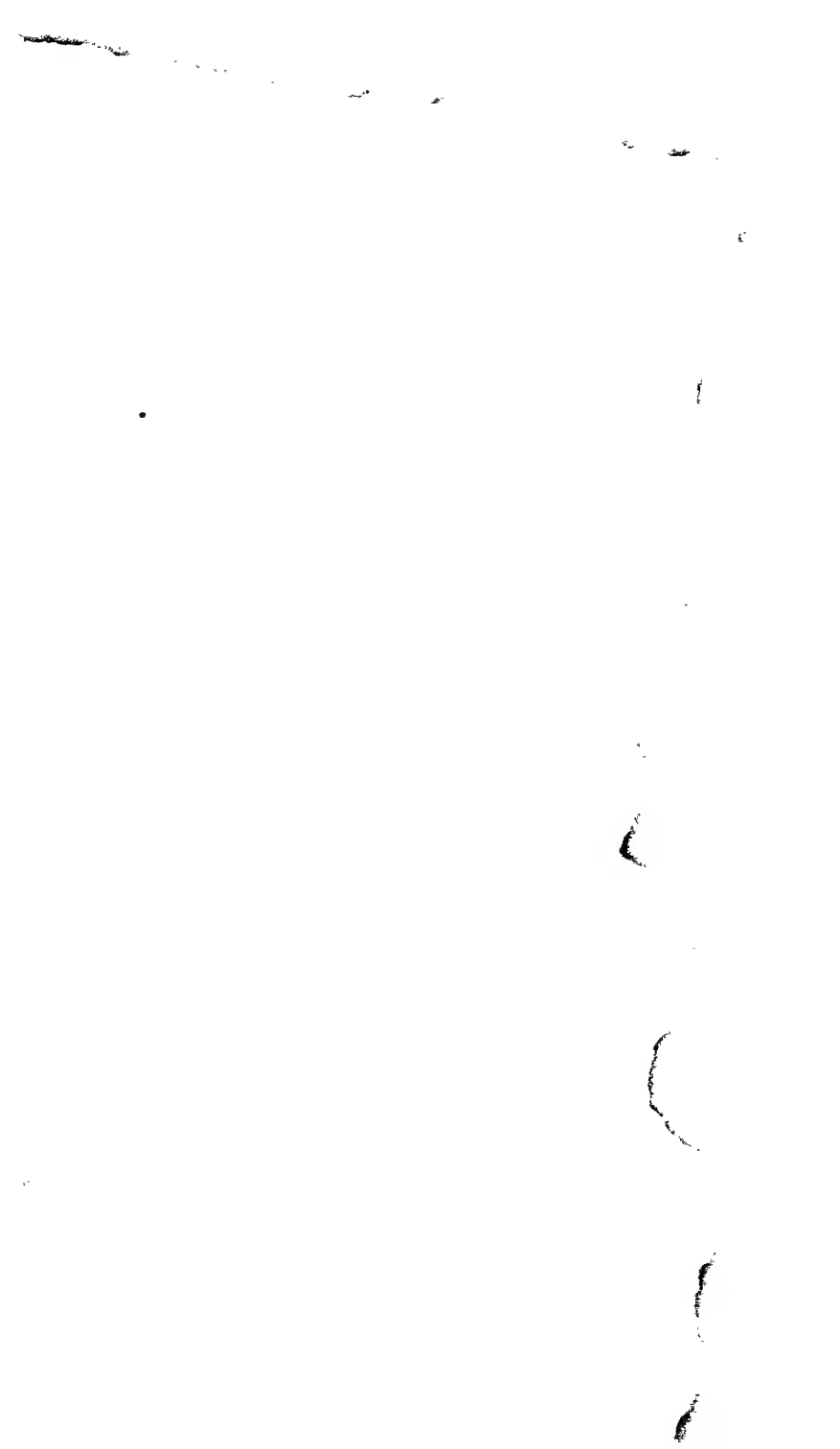


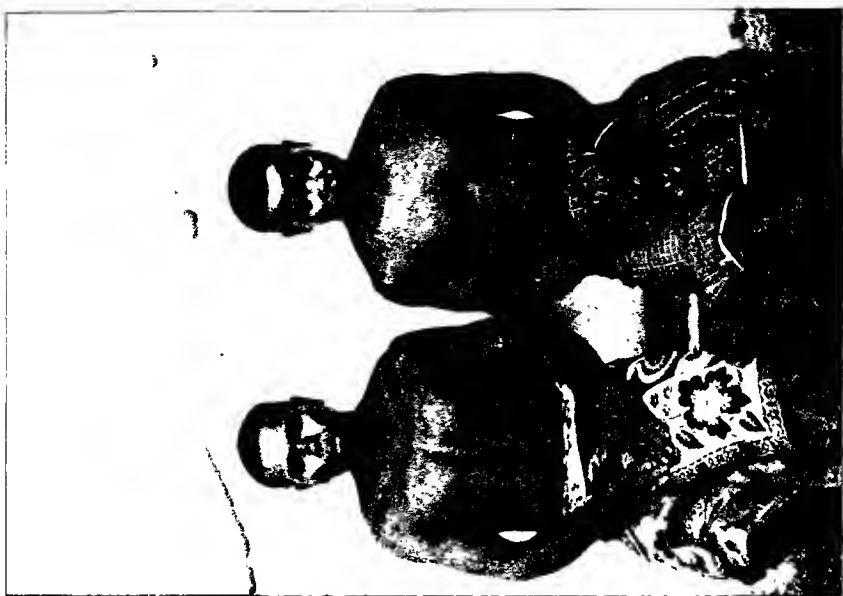


LONDON & DERBY

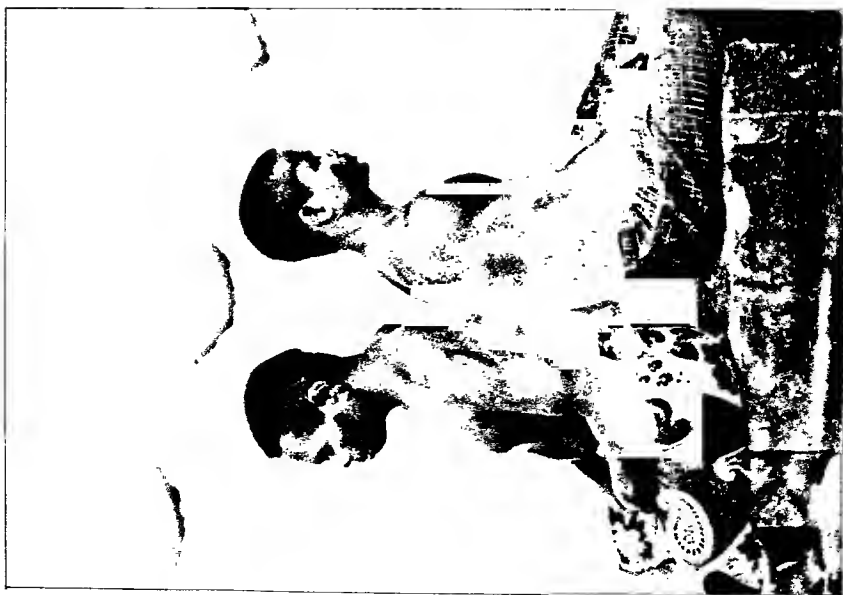


BEAN & SON, PHOTO TINT





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LONDON & DUREY



IN THE N. E. 50° - 54° 10' E. 101°

—COAST NATIVES OF GREAT NICOBAR.

in the very rare instances where hair grows in fair abundance on the face, it is customary among the Nicobarese youth, especially while remaining single, to cut off or pluck out the short scanty growth on the upper lip and chin, this is not only a concession to vanity but is also done to conciliate the fair sex who rightly regard such scanty appendages as unsightly.

At Teressa and Bompoka it is the fashion to wear the hair very short, and the effect of the constant clipping is to render it very coarse and makes it stand almost erect, hence the characteristic feature by which these natives can be most readily distinguished from their neighbours is the brush-like appearance of their cropped wigs. It is also said that the mothers in these islands with a view to producing the desired effect are in the habit of constantly combing and raising the hair off the scalp of their little ones.

Among the Shom Peñ or inland tribe the hair is generally quite straight; it is never cut, washed, oiled, or otherwise cared for, and consequently presents a dirty, matted appearance, and is infested with pediculi; it is seen in reflected light to be of a dull brown-black hue, but streaks of a peculiar yellowish-brown may in some cases be noticed under examination by transmitted light. Among this section of the race also only a very few instances of persons with grey hair have been observed.

#### *Description of Plates XVIII to XXII.*

Plate XVIII. Map illustrating by means of colours, the distribution of dialects in the Nicobar Islands.

Plate XIX. Portraits of father and son, Shom Peñ, inland tribe of Great Nicobar.

Plate XX. Portraits of two young men, typical natives of the Central Group.

Plate XXI. Portraits of two men, typical natives of Teressa and Bompoka.

Plate XXII. Portraits of man and boy, coast natives of Great Nicobar.

These portraits are from negatives taken by Mr. Man, and show in each case a profile and full face.

N.B.—In explanation of certain references to appendices and sections which do not appear in this number of the *Journal*, the reader is informed that Mr. Man hopes to communicate to the Institute, in a series of papers, the results of his researches among the Nicobarese during a residence of many years in their midst. The references apply to these future papers.

## DISCUSSION.

Prof. MELDOLA said that he so fully concurred in the remarks made by Mr. Man in the opening part of the paper which they had just heard, that he hardly felt justified in offering any remarks upon a people with whom he had only had an opportunity of coming into contact for a few weeks during the Eclipse Expedition of 1875. Among the points mentioned in the paper the thick dental incrustation caused by the constant chewing of hetel was perhaps the character which first obtruded itself upon the notice of Europeans brought for the first time into contact with these people. The thickness of the incrustation was sometimes so great as to prevent the closing of the lips, and many of the Nicobarese whose photographs were exhibited appeared in consequence to be permanently open mouthed. He had been given to understand when in the Islands that it was not hetel only which was chewed but a mixture of betel with some earthy matter, and he hoped that they would hear further on this point from Mr. Man. With reference to the carved wooden figures of which photographs were exhibited he mentioned that some religious significance was certainly attached to them because the natives of whom one of the figures was borrowed for the purpose of being photographed, lent the carving only on condition that it should be restored before sunset as they feared an attack of fever if the inmates of the hut slept without the protecting influence of the image. He hoped that in future communications Mr. Man would give them further information on the precise significance which the Nicobarese attached to these carved figures, some of which were by no means bad specimens of wood carving, although extremely grotesque in appearance. In concluding, Prof. Meldola stated that all who had studied Mr. Man's previous papers on the Andamanese would feel assured that the treatment of the anthropology of these equally interesting Nicobarese could not have fallen into better hands, and he thought that the Anthropological Institute was to be congratulated on being the means of giving publicity to such sound and exhaustive work as was being carried on by Mr. Man in the Bay of Bengal.

Mr. C. H. READ thought it would be of interest to those present, who had heard Mr. Man's valuable paper, to know that the specimens sent home by Mr. Man in illustration of his account of the Nicobarese, were now exhibited in the Ethnographical Gallery at the British Museum.

Mr. Alex. J. ELLIS, having been called upon by the Chairman, explained that his only work on Nicobarese had been to assist Mr. Man in the construction of an alphabet for writing that language, which he was glad to say had proved successful in constructing Mr. Man's Nicobarese Vocabulary, which would be published immediately.

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## ANNUAL GENERAL MEETING.

JANUARY 22ND, 1889.

FRANCIS GALTON, Esq., F.R.S., *President, in the Chair.*

The Minutes of the last Anniversary Meeting were read and signed.

The PRESIDENT declared the ballot open and appointed Mr. M. J. WALHOUSE and Mr. R. H. TIDDEMAN as Scrutineers.

Mr. A. L. LEWIS, the TREASURER, read the following report for the year 1888:—

## TREASURER'S REPORT FOR 1888.

The total receipts for the year 1888 have been £612 12s. 0d., being £33 11s. 1d. less than last year. This diminution represents a difference of one life composition, £21, and a falling off of £12 16s. 9d. in the sales of publications, which latter item is much more to be regretted than the former. The expenditure for the year varies but little from that of 1887, and affords little room for retrenchment or for comment.

It is to an increase of income that the members must look as the only means of placing the finances of the Institute in a thoroughly satisfactory condition. Any such increase will be spent chiefly upon the *Journal* and other publications, which will not only be an advantage to the members individually, but will conduce to a larger sale of the publications themselves, and this will be an advantage to the Institute, both directly and indirectly, as well as to the science of which it forms the rallying point. While, then, original research and critical discussion are undoubtedly the most important works in which our members can engage, that of bringing in new and eligible members takes the next place, and can be readily undertaken by many who have not the opportunity of personally making scientific researches.

A. L. LEWIS,  
*Treasurer.*



BALANCES 31st December, 1888 :

At Bankers .....	98 9 7
Petty Cash .....	5 6 11
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98 16 6

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£743 19 6

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£743 19 6

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A. L. LEWIS, *Treasurer.*

Audited and found correct,

(Signed)	EDWARD W. BRABROOK,	} Auditors.
	ROBT. B. HOLT,	

Mr. F. W. RUDLER, the Secretary, then read the following Report:—

REPORT OF THE COUNCIL OF THE ANTHROPOLOGICAL INSTITUTE  
OF GREAT BRITAIN AND IRELAND FOR THE YEAR 1888.

In the course of the past year the Institute has held thirteen ordinary meetings, in addition to the Annual General Meeting.

The following list gives the titles of the various papers and other communications which have been submitted to the Institute during the year:—

1. "On the Akkas, a Pigmy Race from Central Africa." By Professor William Henry Flower, C.B., LL.D., F.R.S., &c., Director of the Natural History Department of the British Museum. With Notes by Emin Pasha.
2. "On Skulls from the Hindu-Kush District." By J. G. Garson, Esq., M.D.
3. "Notes on the Japanese 'Go-hei,' or Paper Offerings to the Shinto gods" (with illustrative specimens). By Basil Hall Chamberlain, Esq. Communicated by Dr. Edward B. Tylor, F.R.S.
4. Exhibition of Decorated Arrows from the Solomon Islands. By Henry Balfour, Esq., B.A.
5. "Further Notes on the Australian Class Systems." By A. W. Howitt, Esq.
6. Exhibition of Inscribed Tablets from Babylon. By Cuthbert E. Peek, Esq., M.A., with Explanation by T. G. Pinches, Esq.
7. "The Races of the Babylonian Empire, from the Monuments." By G. Bertin, Esq.
8. Exhibition of Drawings, by M. Louis Siret, of objects found in S.E. Spain, that were made during the early ages of the use of Metal.
9. "Notes on the Akkas, with Examination of Accounts of Pigmy Tribes of Africa." By Captain Sir Richard F. Burton, K.C.M.G.
10. Exhibition of a Papuan Boy. By Captain Strachan.
11. "On some small highly-specialized forms of Stone Implements, found in Asia, North Africa, and Europe." By John Allen Brown, Esq., F.G.S.
12. "On the Early Ages of Metal in S.E. Spain." By MM. Henri and Louis Siret.
13. "Recent Anthropometry at Cambridge." By J. Venn, D.Sc., F.R.S.
14. "Head Growth of Cambridge Students." By Francis Galton, Esq., F.R.S., President.
15. "Remarks on Replies by Teachers to Questions respecting Mental Fatigue." By Francis Galton, Esq., F.R.S.
16. "Notes on Rubbings from Ancient Inscribed Stone Monuments in Ireland." By G. H. Kinahan, Esq., M.R.I.A.
17. "On the Inhabitants of Paraguay." By Dr. W. Stewart.
18. "Remarks on Mr. Flinders Petrie's Collection of Ethnographic Types from the Monuments of Egypt." By the Rev. Henry George Tomkins.
19. Exhibition of Pottery, &c., from Recent Excavations in New Mexico. By Arthur S. Burr, Esq.
20. "The Nicobar Islanders." Part I. By E. H. Man, Esq., F.R.G.S.
21. A Series of Photographs of New Guinea Types. Exhibited by H. O. Forbes, Esq.
22. Photographs of Nicobarese. Exhibited by Professor R. Meldola, F.R.S.
23. "On a Method of Investigating the Development of Institutions; applied to Laws of Marriage and Descent." By Edward B. Tylor, Esq., D.C.L., F.R.S.
24. A Gold Breastplate, from an Ancient Peruvian Grave. Exhibited by F. Galton, Esq., F.R.S., President.

25. Exhibition of Ethnological objects from the Jivaros of the Upper Amazons, and the Arawaks and Acauays of the interior of British Guiana. By F. W. Rudler, Esq., F.G.S., Secretary.

26. Exhibition of Two Palæolithic Implements from the Valley of the Thames, near Erith. By G. F. Lawrence, Esq.

27. "The Survival of Corporal Penance." By Osbert H. Howarth, Esq.

28. "Marriage Customs of the New Britain Group." By the Rev. Benjamin Danks.

29. Exhibition of a New Form of Anthropometric Instrument, specially designed for the use of travellers. By J. G. Garson, Esq., M.D.

30. "Social Regulations in Melanesia." By the Rev. R. H. Codrington, D.D.

31. "Australian Message Sticks and Messengers." By A. W. Howitt, Esq., F.G.S.

32. "The Distribution and Density of the Old British Population of Hampshire." By T. W. Shore, Esq., F.G.S., F.C.S.

33. "The Monument known as 'King Orry's Grave,' compared with tumuli in Gloucestershire." By Miss A. W. Buckland.

During the year four numbers of the quarterly *Journal* have been punctually issued: namely, Nos. 62, 63, 64 and 65, containing 380 pages of letterpress, illustrated with 13 plates and several woodcuts.

Eleven new members have been elected in the course of the year and one corresponding member has been raised to the Honorary list; but the Institute has, unfortunately, lost, partly by death, and partly by resignation, no fewer than 27 ordinary and 4 honorary members.

It is with much regret that the Council reports the decease of the following members:—

*Honorary Members.*—Dr. R. G. Latham, Mr. W. Gifford Palgrave, the Hon. E. G. Squier, and Dr. Philip A. Walther.

*Ordinary Members.*—Mr. T. Bendyshe, Dr. W. Camps, Colonel F. Duncan, Mr. W. Eassie, Mr. T. H. Edwards, Prof. E. Tyrrell Leith, Sir H. Sumner Maine, Mr. F. J. Morgan, Mr. W. G. Ranger, Mr. T. W. U. Robinson, and Dr. T. Harrington Tuke.

The former and present states of the Institutes, with regard to the number of members, are compared in the following table:—

	Honorary.	Corresponding.	Compounders.	Ordinary.	Total.
January 1st, 1888	44	75	91	239	449
Since elected ..	1	..	..	11	12
Since deceased ..	4	..	4	7	15
Since retired or struck off ..	..	1	..	16	17
January 1st, 1889	41	74	90	224	429

As this table shows a net loss during the year, the Council takes this opportunity of expressing its earnest desire that all who have at heart the interests of Anthropological Science in this country, will endeavour to maintain the numerical strength and effectiveness of the Institute by procuring the nomination of new candidates for membership.

The Council notes, as a satisfactory sign of increasing interest in Anthropology, that the Anthropometric Laboratory, established at South Kensington, by Mr. Francis Galton, and mentioned in his last Anniversary Address, has been open during the year, and that nearly 1,200 persons have been measured in various ways, and the measurements registered for future reference.

The Council has learnt, with much satisfaction, that in the reconstruction of the Government Grant Committee of the Royal Society, the President of the Anthropological Institute has been appointed a member.

The Council is also pleased to learn that the India Council has seen fit to grant a subsidy to Mr. Man, towards the preparation of his Nicobarese Vocabulary.

It may be mentioned that the Anthropological Section of the British Association held a successful Session at Bath, under the Presidency of General Pitt-Rivers, one of the Vice-Presidents of the Institute.

The second volume of his important work on "Explorations in Cranborne Chase," has been recently issued and freely distributed at his private expense.

Mr. Francis Galton's second term of office, as President, has now expired, and the Council desires to put on record its sense of the valuable services which he has rendered to the Institute, and to the cause of Anthropological Science in general, during the past four years. The many ways in which Mr. Galton has promoted the interests of the Institute demands, in an exceptional manner, the grateful acknowledgment of the members.

The Council has nominated as Mr. Galton's successor, Dr. John Beddoe, F.R.S., of Clifton, one of the Vice-Presidents of the Institute, and a former President of the Anthropological Society before the formation of the Institution. His numerous and substantial contributions to ethnology and physical anthropology are appreciated by all who take an interest in the science, and the Council feels that the future of the Institute may be committed with confidence to his guidance.

On the motion of the Earl of NORTHESK, seconded by Dr. GARSON, the Reports of the Treasurer, and of the Council, were adopted.

The PRESIDENT then delivered the following address :—

ADDRESS *delivered at the ANNIVERSARY MEETING of the ANTHROPOLOGICAL INSTITUTE of GREAT BRITAIN and IRELAND, January 22nd, 1889.*

By FRANCIS GALTON, Esq., F.R.S., President.

It would have been a pleasure to me in this address, given at the conclusion of my office as your President, to have cast a retrospect over the proceedings of our Institute during the four years that I have had the honour to hold it. But the subjects that have come before us are so varied that it seemed difficult to briefly summarize them in a manner that should not be too desultory.

On the whole, I thought it might be more useful if I kept to a branch of anthropometry with which many inquiries have made me familiar, and took the opportunity of urging certain views that seem to be worthy the attention of anthropologists.

Before entering upon these more solid topics, let me mention that the laboratory of which I spoke in my last address has been in work during the past year, and that about 1200 persons have been already measured at it in many ways, some more than once. I lay on the table a duplicate of one of the forms of application to be measured, and one of the filled-up schedules. It will be observed that I now have the impressions made in printers' ink of the two thumbs of each person who is measured, being desirous of investigating at leisure the possibilities of employing that method for the purpose of identification, not forgetting the success that attended Sir W. Herschel's use of it in India, but conscious at the same time of practical difficulties. There is no doubt that the imprints of the thumb or finger of different persons vary so much that a glance suffices to distinguish half a dozen varieties, while a minute investigation shows an extraordinary difference in small, though perfectly distinct, peculiarities. Neither is there any room for doubt

that these peculiarities are persistent throughout life ; nor, again that so satisfactory a method of raising a very strong presumption of identity would be valuable in many cases. It will suffice to quote the following. A newspaper was lately sent me from the distant British settlement of North Borneo, where, owing to the wide and rapid spread of information nowadays, attention had been drawn to an account of a lecture I gave on one of the Friday evenings last spring, at the Royal Institution. It was on "Personal Description and Identification," and a writer in the *British North Borneo Herald* commented upon the remarks there made on finger imprints. He spoke of the great difficulty of identifying coolies either by their photographs or measurements, and added that the question how this could best be done would probably become important in the early future of that country. I also am assured that the difficulty of identifying pensioners and annuitants has led to frequent fraud from personation, involving in the aggregate a very large sum of money annually, as there is good reason to believe. If finger imprints could be practically brought into use, such frauds would be extremely difficult. I am still unable to speak positively as to the easiest and best way of making them, but the plan adopted at the laboratory is as follows. A copper plate is smoothly covered with a very thin layer of printers' ink by a printers' roller, the plate being cleaned every day. Either the plate, or the roller, but preferably the roller, is lightly touched by the thumb, which is afterwards pressed on paper. As the layer of ink is thin, none of it penetrates into the delicate furrows of the skin, but the ridges only are inked, and these leave clear impressions. In this way a permanent mark is registered. A little turpentine cleans the fingers effectually afterwards. But for purposes of identification a simpler process is necessary, one by which a person suspected of personation could furnish an imprint for comparison with the registered mark without having recourse to the troublesome paraphernalia of the printer. Such a process may perhaps be afforded by slightly smoking a piece of smooth metal or glass

over the candle, pressing the finger on it, and then making the imprint on a bit of gummed paper that is slightly dampened. The impression is particularly distinct, and is sufficiently durable for the purpose. As for the gummed paper, luggage labels can be used; even the fringe to sheets of postage stamps is broad enough to include as much of the impression as is especially wanted—namely, where the whorl of ridges takes its origin.

I hope at some future time to recur to this subject.

*Correlation.*—The various measurements made at the laboratory have already afforded data for determining the general form of the relation that connects the measures of the different bodily parts of the same person. We know in a general way that a long arm or a long foot implies on the whole a tall stature—*ex pede Herculem*; and conversely that a tall stature implies a long foot. But the question is whether their reciprocal relation, or correlation as it is commonly called, admits of being precisely expressed. Correlation is a very wide subject indeed. It exists wherever the variations of two objects are in part due to common causes; but on this occasion I must only speak of those correlations that are of anthropological interest. The particular problem I first had in view was to ascertain the practical limitations of the ingenious method of anthropometric identification due to M. A. Bertillon, and now in habitual use in the criminal administration of France. As the lengths of the various limbs in the same person are to some degree related together, it was of interest to ascertain the extent to which they also admit of being treated as independent. The first results of the inquiry, which is not yet completed, have been to myself a grateful surprise. Not only did it turn out that the expression and the measure of correlation between any two variables are exceedingly simple and definite, but it became evident almost from the first that I had unconsciously explored the very same ground before. No sooner had I begun to tabulate the data than I saw that they

ran in just the same form as those that referred to family likeness in stature, which were submitted to you two years ago. A very little reflection made it clear that family likeness was nothing more than a particular case of the wide subject of correlation, and that the whole of the reasoning already bestowed upon the special case of family likeness was equally applicable to correlation in its most general aspect.<sup>1</sup>

It may be recollected that family likeness in any given degree of kinship—say that between father and son—was expressed by the fact that any peculiarity, that is to say, any difference from mediocrity in the father appears in the son, reduced on the average to just one-third of its amount. Conversely, however paradoxical it might at first sight appear, any peculiarity in a son appears in the father, also reduced on the average to one-third of its amount. The “regression,” as I called it, from the stature of the known father to the average son, or from the known son to the average father, was from 1 to  $\frac{1}{3}$ ; from the known brother to the unknown brother it was  $\frac{2}{3}$ ; from uncle to nephew, or from nephew to uncle, it was  $\frac{2}{3}$ ; and in kinship so distant as to have no sensible influence, it was from 1 to 0. Whether the peculiarity was large or small, these ratios remained unaltered. The reason of all this was thoroughly explained, and need not be repeated here. Now the relation of head-length to head-breadth, whose variations are on much the same scale, or speaking in technical language, whose probable errors are the same, is identical in character to the relation between kinsmen. There is regression in both cases, though its value differs. The lengths of head-lengths and head-breadths are akin to each other in the same sense as kinsmen are. So it is in the closer relation between the lengths of symmetrical limbs, left arm to right arm, left leg to right leg. The regression would be strictly reciprocal in these cases. When, however, we compare limbs whose variations take place on different scales, the differences of scale have

<sup>1</sup> “*Proc. Roy. Soc.*,” 1886, p. 42, and “*Journ. Anthropol. Inst.*,” 1885, p. 252.

to be allowed for before the regression can assume a reciprocal form. The plan of making the requisite allowance is perfectly simple; it merely consists in dividing each result by the probable error of any one of the observations from which it was deduced. Unfortunately the method cannot be briefly explained except by using these technical terms. In some cases the scale of variation in the two correlated members is very different, and this divisor may be very large. Thus the length of the middle finger varies at so very different a rate from that of the stature that 1 inch of difference of middle finger length is associated on the average with 8.4 inches of stature. On the other hand, 10 inches of stature is associated on the average with 0.6 inch of middle finger length. There is no reciprocity in these numerals; yet, for all that, when the scale of their respective variations is taken into account by using the above-mentioned divisor, the values become strictly reciprocal. I shall be better able to enter more fully into this subject later on, towards the close of this address.

*Variety.*—The principal topic of my further remarks will be the claims of Variety to more consideration from anthropologists than it usually receives. Anthropologists commonly narrow their inquiries to the purpose of ascertaining the mean values of different groups, while the variety of the individuals who constitute them is too often passed over with contented neglect. It seems to me a great loss of opportunity when, after observations have been laboriously collected and subsequently discussed in order to obtain mean values, the very little extra trouble has not been taken that would determine such other values as would go far to express the variety of the individuals in those groups. Much experience some years back, and much new experience during the past year, has proved to me the ease with which variety may be adequately expressed, and the high importance of taking it into account. Numerous problems that ought to be of especial interest to anthropologists, deal solely with variety.

There can be little doubt that most persons fail to have an adequate conception of the orderliness of variability, and think it useless to pay scientific attention to variety, as being, in their view, a subject wholly beyond the powers of definition. They forget that what is confessedly undefined in the individual may be definite in the group, and that uncertainty as regards the one is in no way incompatible with statistical assurance as regards the other. Almost everybody is familiar nowadays with the constancy of the Average in different samples of the same large group, but they do not often realise the way in which a similar statistical constancy permeates the whole of the relations between the various members of the group. The Mean or the Average is practically nothing more than the middlemost value in a marshaled series. A constancy analogous to that of the Mean characterises each value that occupies the other fractional positions, such as the 10th per cent., or the 20th per cent. of the total length of the marshaled series. The condition of constancy is not a peculiar attribute of the 50th per cent., or middlemost.

Greater interest is usually attached to individuals who occupy positions towards either of the ends of a marshaled series, than to those who stand about its middle. For example, an average man is morally and intellectually an uninteresting being. The class to which he belongs is bulky, and no doubt serves to keep the course of social life in action. It also affords, by its inertia, a regulator that, like the fly-wheel to the steam-engine, resists sudden and irregular changes. But the average man is of no direct help towards evolution, which appears to our dim vision to be the primary purpose, so to speak, of all living existence. Evolution is an unrelenting progression; the nature of the average individual is essentially unprogressive. His children tend to resemble him exactly, whereas the children of exceptional persons tend to regress to mediocrity. Consider the interest attached to variation in the moral and intellectual nature of man and the value of variability in those respects. For example, the average worth of the Hebrew race shows little that is worthy

of note, but that race has been of peculiar interest on account of the great varieties of character that it has produced. Its variability in ancient and modern times seems to have been extraordinarily great. It has been able to supply men, time after time, who have towered high above their fellows, and have left enduring marks on the history of the world.

Some thorough-going democrats may look with complacency on a mob of mediocrities, but to most other persons they are the reverse of attractive. The absence of elevated and heroic natures in any group of men is a heavy set-off against the freedom from a corresponding number of very degraded forms. The general standard of thought and morals in a mob of mediocrities must be mediocre, and, what is worse, contentedly so. The lack of living men to afford lofty examples, and to educate the virtue of reverence, must leave an irremediable blank. All men would in that case find themselves at nearly the same dead average level, each as meanly endowed as his neighbour.

These remarks apply with obvious modifications to variety in the physical faculties. Peculiar gifts, moreover, afford an especial justification for division of labour, each man doing that which he can do best.

The method I have myself usually adopted for expressing and dealing with the variety of the individuals in a group, so as to treat a whole population in a compendious way, has been already explained on more than one occasion. I should not have again alluded to it had I not had much occasion of late to test and develop it, also to devise an unpretentious little table of figures that I call a "table of normal distribution," which has been of singular assistance to myself. I trust it may be equally useful to other anthropologists. It is appended to these remarks, and I should like after a short necessary preface to say something about it. The table and its origin, and several uses to which it has been applied, will be found in a book by myself, that is on the point of publication, called "Natural Inheritance" (Macmillan and Co.). All the data to which I shall refer will be found in that book also, except such as concern correlation.

These accompanied a memoir read by me only a month ago before the Royal Society.<sup>1</sup>

The first step in the problem of expressing variety among the individual members of any sample, is to marshal their measures in order, into a class. We begin with the smallest measure and end with the greatest. The object of the next step is to free ourselves from the embarrassment due to the different numbers of individuals in different classes. This is effected by dividing the class, whatever its size may be, into 100 equal portions, calling the lines that divide the portions by the name of grades. The first of these portions will therefore lie between grades 0° and 1°, and the hundredth and last portion between grades 99° and 100°. We have next to find by interpolation the values that correspond to as many of these grades as we care to deal with. It is of no consequence whether or no the number in the class is evenly divisible by 100, because we can interpolate and get the values we want, all the same. This having been done, the value that corresponds to the 50th grade will be the middlemost. It is the equivalent for all ordinary purposes to the mean or average value; but as it may not be strictly the same, it is right to call it by a distinctive name,

<sup>1</sup> "Proc. Roy. Soc.," Dec. 20, 1888, vol. 45. "Correlations and their Measurement, chiefly from Anthropometric Data." The general result of the inquiry was that, when two variables that are severally conformable to the law of frequency of error, are correlated together, the conditions and measure of their closeness of correlation admits of being easily expressed. Let  $x_1, x_2, x_3$ , &c., be the deviations in inches, or other absolute measure of the several "relatives" of a large number of "subjects," each of whom has a deviation,  $y$ , and let  $\bar{X}$  be the mean of the values of  $x_1, x_2, x_3$ , &c. Then (1)  $y = r\bar{X}$ , whatever may be the value of  $y$ . (2) If the deviations are measured, not in inches or other absolute standard, but in units, each equal to the  $Q$  (that is, to the probable error) of their respective systems, then  $r$  will be the same, whichever of the two correlated variables is taken for the subject. In other words, the relation between them becomes reciprocal; it is strictly a correlation. (3)  $r$  is always less than 1. (4)  $r$  (which, in the memoir on hereditary stature, was called the ratio of regression) is a measure of the closeness of correlation. (5) The probable error, or  $Q$ , of the distribution of  $x_1, x_2, y_3$ , &c., about  $\bar{X}$ , is the same for all values of  $y$ , and is equal to  $\sqrt{(1-r^2)}$  when the conditions specified in (2) are observed.

It should be noted that the use of the  $Q$  unit enables the variations of the

and none simpler or more convenient occurs than the letter *M*. So I will henceforth use *M* to denote the middlemost or median value, or, in other words, that which corresponds to the 50th (centesimal) grade.

The difference between the extreme ends of a marshaled series is no proper measure of the variety of the men who compose it. However few may be the objects in the series, it is always possible that a giant or a dwarf, so to speak, may be included among them. The presence of either would mislead as to the range of variety likely to be found in another equally numerous sample taken from the same group. The values in a marshaled series run with regularity only about its broad and middle part; they never do so in the parts near to either of its extremities. In a series that consists of a few hundreds of individuals, the regularity is usually found to begin at about grade  $5^\circ$ , and to continue up to about grade  $95^\circ$ . Therefore it is out of the middle part, between  $5^\circ$  and  $95^\circ$ , or better out of a still more central portion of it, that points should be selected between which the rate of its variety may be measured. Such points are conveniently found at the 25th and the 75th grades. Just as the grade  $50^\circ$  divides the class into two equal parts, so the grades  $25^\circ$  and  $75^\circ$  subdivide it into quarters, and the difference between those values affords an irreproachable basis for the unit of variety. The actual unit is taken as the half of the value of that difference, because the value at  $25^\circ$  tends to be just as much below that at  $50^\circ$ , as the value at  $75^\circ$  is above it. Therefore the average of these two values is a better measure than their sum. Briefly, if we distinguish the measure at  $25^\circ$  by the letter  $Q_1$ , and that at  $75^\circ$  by  $Q_3$ , then the unit of variety is  $\frac{1}{2}(Q_3 - Q_1)$ , and this unit we will henceforth call *Q*. It is practically, but not strictly, identical with the "probable error" of a single observation, and is a useful symbol, as commonest diverse qualities to be compared with as much precision as those of the same quality. Thus, variations in lung-capacity which are measured in volume can be compared with those of strength measured by weight lifted, or of swiftness measured in time and distance. It places all variables on a common footing.

sisting of a single syllable and a single letter instead of the 5 syllables and the 13 letters that form the very misleading phrase of "probable error." As M measures the average, so Q measures the variety, and they are independent of one another. In strength, for example, the relation of Q to M in the particular group of adult males on which I worked was as 1 to 10; in the statures of the same group it was as 1 to 40; in breathing capacity as 1 to 9; in weight as 1 to 14.

The mean or average is an arithmetical muddle of all the values in the series; it presents to the imagination by no means so clean an idea as the middlemost value M. Therefore, although the peculiarities of an individual are commonly considered in the light of deviations from the mean or average value, I prefer to reckon them as deviations from M. Practically the two methods are identical, but I find the latter more convenient to work with, and believe it to be the better of the two in every other way.

The causes and the laws of deviation, or of variation, are identical with those of error, and the well-known law of frequency of error gives data whence the *relative* values of the deviations at the several grades may be calculated for any normal series. If we know the actual deviation at any one specified grade, then the *absolute* values of those at every other grade can be calculated; consequently the variety of the whole series is expressed by only two data, a grade and the corresponding deviation.

The small table of distribution, of which I spoke, gives the values at each grade when Q is equal to 1. In this case the value at 25° is - 1, and that at 75° is + 1. If we desire to determine the Q of any such series, the only required datum, as has been just laid, is the value of the deviation at some one known grade; then, by dividing that deviation by the tabular value, we obtain Q at once. Or, conversely, if we know the Q of the series, and wish to calculate the deviation at any given grade we multiply the tabular deviation by Q. Thus, in the stature of men, which varies in an approximately normal

manner, the value of  $Q$  is about 1·7 inch, therefore to find the deviation in stature at any grade among adult males, we multiply the tabular value by 1·7 inch.

If we know the *measures* at any two specified grades of a normal series, we are easily able to calculate both  $Q$  and  $M$ , and can thence derive the measures at any other desired grades. I have long since pointed out the possibility of a traveller availing himself of this method of anthropological investigation ; but, for the want of the annexed table of distribution, he would probably be puzzled in making the necessary calculation. With the aid of this table the calculation is most readily performed. Let us suppose that the traveller is among savages who use the bow, and that he desires to learn as much as he can about their strengths. He selects two bows ; the one somewhat easy to draw, and the other somewhat difficult, and at his leisure, either before or after the experiment he ascertains exactly how many pounds weight is required to draw them severally to the full. Then by exciting emulation and by the offer of small prizes, he induces a great many of the natives to try their strengths upon them. He notes how many make the attempt, and how many of them fail in either test. This is all the observation requisite, though common sense would suggest the use of three and not two bows, in order that the data from the third bow might correct or confirm the results derived from the other two. Let us work out a case, not an imaginary one, but derived from tables I have already published, and of which I will speak directly. Let the problem be as follows :—

30 per cent. of the men fail to exert a pulling strength of 68 pounds ; 60 per cent. fail to pull 77 pounds. What is the  $Q$  and the  $M$  of the group ?

Consider this 30 per cent. to be the exact equivalent of grade  $30^\circ$ , and the 60 per cent. of grade  $60^\circ$ . The reason why the percentage of failure, and the number of the grade are always to be taken as identical will be found in a footnote to the table, and I need not stop to speak of it. Now, the tabular value at grade  $30^\circ$  is  $-0\cdot78$  ; that at  $60^\circ$  is  $+0\cdot38$  ; the difference between them

being 1.16. On the other hand, the difference between the two test values of 68 pounds and 77 pounds is 9 pounds. Therefore  $Q$  is equal to 9 pounds divided by 1.16; that is, to 7.8 pounds.  $M$  may be obtained by either of two ways, which will always give the same answer. We may subtract  $0.38 \times 7.8$  pounds from 77 pounds, or we may add  $0.78 \times 7.8$  pounds to 68 pounds. Each gives 74 pounds. Observation gave precisely these values both for  $Q$  and for  $M$ . The data were published in the Journal of this Institute in 1884 as a table of "percentiles," and were derived from measures made at the International Health Exhibition. The value of  $M$  is given directly in the table, but that of  $Q$  happens not to be given there; it may easily be found by interpolation between those that are.

That table of percentiles affords excellent material for experimental calculations on the principle of this test, and for estimating its trustworthiness in practice. It contains a variety of measures referring to eighteen different series, all corresponding to the same grades—namely, to  $5^\circ$ ,  $10^\circ$ ,  $20^\circ$ . and onwards for every tenth grade up to  $90^\circ$  and ending with  $95^\circ$ . The measures refer to stature, height sitting above seat of chair, span, weight, breathing capacity, strength of pull, strength of squeeze, swiftness of blow, keenness of eyesight, and in each case the values are given for adult males and adult females separately. I have since found ("Natural Inheritance," pages 56, 201), that when the deviations are all reduced in terms of their respective  $Q$  values, by dividing each of them by its  $Q$ , that the average value of all the deviations at each of the grades in the eighteen series closely corresponds to the normal series, though individually they differ more or less from it, some in one way, some in another. On the whole, the error of treating an unknown series as if it were a normal one can rarely be very large, always supposing that we do not meddle with grades lower than  $5^\circ$  or higher than  $95^\circ$ .

It will be of interest to put the comparison on record. It is as follows:—

Grades ....	5°	10°	20°	30°	40°	50°
Observed ....	- 2.44	- 1.87	- 1.24	- 0.77	- 0.40	0
Normal - below 50° + above 50° } ....	2.44	1.90	1.25	0.78	0.38	0
Observed ....	+ 2.47	+ 1.92	+ 1.21	+ 0.75	+ 0.38	0
Grades ....	95°	90°	80°	70°	60°	50°

The "observed" are the mean values, made as above described, of the eighteen series; the "normal" are taken from the table of distribution given further on.

An ingenious traveller might obtain a great number of approximate but interesting data by the method just described, measuring various faculties of the natives, such as their delicacy of eyesight and hearing, their swiftness in running, their accuracy of aim with spear, arrow, boomerang, sling, gun, and so forth, laterally from the object aimed at, or else vertically; distance of throw, the stature, and much else. But he should certainly use three test objects, and not two only.

It should be remarked that, if the distribution of deviation proved to be constant throughout any large class of faculties, though the Q might differ in different sub-classes of it, then, even though the distribution of that faculty was very far indeed from being normal, an appropriate table of distribution could still be compiled in order to solve such problems as those mentioned above. I have as yet no accurate data to put this idea to a practical test.

There are three convenient stages of approximation in expressing the variety of the various measures in a series, each of which reaches considerably nearer to precision than the one before. The first is to give only Q and M; the second is to record the measures at the grades 10°, 25°, 50°, 75°, and 90°; the third is the more minute method, adopted in the tables of

percentiles—viz., to give the measures at  $5^{\circ}$ ,  $10^{\circ}$ ,  $20^{\circ}$ , &c.,  $80^{\circ}$ ,  $90^{\circ}$ , and  $95^{\circ}$ . It may in some cases be found worth while to go further, say to  $1^{\circ}$  and  $99^{\circ}$ , or even also to  $0^{\circ}.1$ , and  $99^{\circ}.9$ . So much for the method of expressing variety.

The use of  $Q$  is by no means limited to the objects just named. It is a necessary datum wherever the law of frequency of error has to be applied, whose properties are applicable to a very large number of anthropological problems with more accuracy of result than might have been anticipated, as the series are only approximately normal. This has been practically shown by the agreement among themselves of several inquiries to which I will shortly allude. It is theoretically defensible by two considerations. The one is that the law of frequency supposes the amount of error or of deviation to be the same in symmetrically disposed grades on either side of  $50^{\circ}$ , their signs being alone different, *minus* on the one side of  $50^{\circ}$  and *plus* on the other. Now, in an observed series there may be, and often is, a want of symmetry, but if the deviate, say at  $70^{\circ}$ , is as much greater than the normal value as the deviate at  $30^{\circ}$  is less than the normal, then the effects of these two upon the final result will be much the same as if there had been exact symmetry at those points. The other consideration is that any nonconformity between the observed deviates and the theoretical ones mostly affects the extremities of the series, and consequently has but a small and perhaps insensible effect on the broad general conclusions. We need care little for any vagaries outside of the grades  $5^{\circ}$  and  $95^{\circ}$ , if the intervening portion gives fairly good results. As the latter forms nine-tenths of the whole series, the irregularities in the remaining tenth are of small relative importance.

One great use of  $Q$  or of any of its equivalents, as the mean error, &c., is to enable us to estimate the trustworthiness of our average results. We require to know both  $Q$  and the number of the observations, before it is possible to estimate the degree of dependence to be placed on  $M$ . If only one observa-

tion was accessible, then the degree of its trustworthiness (its "probable error") would of course be equal to  $Q$ ; in other words, its error would be just as likely as not to exceed  $Q$ . If there were two, two hundred, two thousand, or any other number of observations, the probable errors of their respective values  $M$  would be reduced, but not in simple proportion. They would be equal to  $Q$  divided by the square roots of those numbers.

When we desire to ascertain the trustworthiness of the difference between the  $M$  values of two series, as between the mean statures of the professional and artisan class as derived from certain observations, the properties of the law of frequency of error must again be appealed to. Anthropologists are much engaged in studying such differences as these; but from their disregard of the simple datum  $Q$  or of some one of its equivalents, and from not being familiar with the way of employing them, there is usually a lamentable and quite unnecessary vagueness in the value that can be assigned to their results. This is especially the case in comparisons between the average dimensions of the skulls of various races, when the average values are alone given, and when they have been derived, as is often the case, from the measurement of only a few specimens. An almost solitary exception to this needless laxity in statistical treatment will be found in a brief but admirably-expressed memoir by Dr. Venn, the well-known author of the "Logic of Chance." It is upon Cambridge anthropometry, and was published in the last number of the Journal of this Institute. It deserves to be a model to those who are engaged in similar inquiries.

Another class of investigations in which a knowledge of  $Q$  is essential, was spoken of some time back—namely, into the questions of Correlation in the widest sense of the word. These problems have nothing to do with the relations of the  $M$  values, but are solely concerned with variations, that is with the deviations from  $M$  at the various grades. It is true that a knowledge of  $M$  is requisite. We have to subtract it from the measures in

order to get at the deviations. But after this is done, *M* is put aside. It has no part in the work of the problem; it is only after the results have been arrived at without its use that it is again brought forward and added to them. Numerous properties of the law of frequency of error in which *Q* is the datum, were utilized in my inquiries into family likeness in stature, and in all cases they brought out consistent results. An excellent example of their consistency was seen in the results of the methods employed to determine the variety of individual statures in families of brothers. Four different properties of the law had to be applied to partly different samples of the same group in order to determine the value of the *Q* of stature in fraternities, and they respectively gave 1.07, 0.98, 1.10, and 1.10 inch, which, statistically speaking, are much alike. Certain properties of the law of frequency of error were also applied to family likeness in eye colour, with results that gave by calculation the total number of light-eyed children in families differently grouped according to their parentage and grandparentage, and according to three different sets of data. The resulting figures were 623, 601, and 614 respectively, the observed number being 629 (*Proc. Roy. Soc.*, 1886, p. 415). Other properties of the same law have been applied by myself in the book already mentioned to determine the ratio of artistic to non-artistic children in families whose parentages were known to be either both artistic, one artistic and one not, or neither artistic. They gave the ratios of 64, 39, and 21 respectively, as against the observed values in 1507 children, of 60, 39, and 17.

Lastly, as regards the correlation of lengths of the different limbs. It has already been shown that the correlation connects the deviations, and has nothing to do with the mean or average values. Now, to express this relation truly, so that it shall be reciprocal, the scale of deviation of the correlated limbs, say, for example, of the cubit and of the stature of adult males, must be reduced to a common standard. We therefore reduce them severally to scales in each of which their own *Q* is the

unit. The  $Q$  of the cubit is 0.56 inch, therefore we divide each of its deviations by 0.56. The  $Q$  of the stature is 1.75 inch, so we divide each of its deviations by 1.75. When this is done the correlation is perfect. The value of regression is found to be 0.8, whether the cubit be taken as the "subject" and the mean of the corresponding statures as the "relative," or *vice versa*.

The value of the regression was ascertained for each of many pairs of the following elements, and a comparison made in each case between the correlated values as observed and those calculated from the ratio of regression. The coincidence was close throughout, quite as much so as the small number of cases under examination, 350 in all, could lead us to hope. The elements were nine in number,<sup>1</sup> viz., head length, breadth of head, length of right leg below the knee, of left cubit, of left middle finger, of the height sitting above the chair, of stature, of the differences between the two foregoing (which indicate the total

<sup>1</sup> The head length is here the maximum length measured from the notch below the brow. The cubit is measured with the hand prone, from the flexed elbow to the tip of the middle finger. The height of knee is taken from a stool, on which the foot rests with the knee flexed at right angles; from this the measured thickness of the heel of the boot is subtracted. All measures had to be made in the ordinary clothing. The  $M$  and  $Q$  values of these elements among adult males were found to be as follows: left cubit, 18.05 and 0.56; stature, 67.2 and 1.75; head length, 7.62 and 0.19; head breadth, 6.00 and 0.18; left middle finger, 4.54 and 0.15; height of right knee, 20.50 and 0.80; all the measures being in inches. The values of  $r$  in the following pairs of variables were found to be: head length and stature, 0.35; left middle finger and stature, 0.70; head breadth and head length, 0.45; height of knee and stature, 0.9; left cubit and height of right knee, 0.8. The comparison of the observed results with those calculated from the above data showed a very close agreement (Proc. Roy. Soc., Dec. 20, 1888). The measures were of 350 male adults, containing a large proportion of students barely above twenty-one years of age and several artisans, made at the laboratory at South Kensington, belonging to the author. The smallness of the number of measures, viz., 350, is of little importance, as the results run with fair smoothness. Neither does the fact of most of the persons measured being hardly full grown, and of others being of the generally short class of artisans, affect the main results. It somewhat diminishes the values of  $M$ , and very slightly increases that of  $Q$ , but it cannot be expected to have any considerable influence on the value of  $r$ .

length of the lower limbs), and of the span. Anthropologists seem to have little idea of the wide fields of inquiry open to them as soon as they are prepared to deal with the variety of individuals, and cease to narrow their view to the consideration of the average value of all of them.

Enough has now been said to justify the claims with which I started, and which take this final form. First, wherever it is likely to be of use, that, in those series of which the *M* is calculated, the measures at a certain number of selected grades should also be calculated and given, sufficient to enable the rest of the marshaled series to be found with adequate accuracy by interpolation. Secondly, that the value of *Q* or of one of its equivalents should always be given as well, and for two reasons. The one is, that *M* and *Q* suffice between them to give an approximate determination of the whole series, which is the more closely approximate as the series is more closely of the normal type; and, secondly, because *Q* or one of its equivalents is an essential datum before any application can be made of the law of frequency of error. The properties of this law are, as we have seen, largely available in anthropological inquiry. They enable us to define the trustworthiness of our results, and to deal with such interesting problems as those of correlation and family resemblance, which cannot be solved without their help.

*Table of ordinates to the normal Curve of Distribution, in which the unit = the probable error, and the grades, which are the abscissæ, run from 0° to 100°.*

Grades.	0	1	2	3	4	5	6	7	8	9
0	$\infty$	-3.45	-3.05	-2.79	-2.60	-2.44	-2.31	-2.19	-2.08	-1.99
10	-1.90	-1.82	-1.74	-1.67	-1.60	-1.54	-1.47	-1.42	-1.36	-1.30
20	-1.25	-1.20	-1.15	-1.10	-1.05	-1.00	-0.95	-0.91	-0.86	-0.82
30	-0.78	-0.74	-0.69	-0.65	-0.61	-0.57	-0.53	-0.49	-0.45	-0.41
40	-0.38	-0.34	-0.30	-0.26	-0.22	-0.19	-0.15	-0.11	-0.07	-0.04
50	+0.00	+0.04	+0.07	+0.11	+0.15	+0.19	+0.22	+0.26	+0.30	+0.34
60	+0.38	+0.41	+0.45	+0.49	+0.53	+0.57	+0.61	+0.65	+0.69	+0.74
70	+0.78	+0.82	+0.86	+0.91	+0.95	+1.00	+1.05	+1.10	+1.15	+1.20
80	+1.25	+1.30	+1.36	+1.42	+1.47	+1.54	+1.60	+1.67	+1.74	+1.82
90	+1.99	+1.99	+2.08	+2.19	+2.31	+2.44	+2.60	+2.79	+3.05	+3.45

This table is an inverse rendering of the values derived by interpolation from the ordinary table of the probability integral, but its unit is changed from that of the modulus to that of the probable error, or what is almost exactly the same thing, to  $Q$ ; and the (centesimal) grades are reckoned from  $0^\circ$  to  $100^\circ$ . In the usual way of reckoning, the 50th grade should have been reckoned as  $0^\circ$ , and the deviations should have run on the one side down to  $-50^\circ$ , and on the other up to  $+50^\circ$ .

Referring to what was said some way back, that if 30 per cent. of the natives whose strength was being tested fail to pull 60 pounds, then 60 pounds must be taken as the measure corresponding to the grade of  $30^\circ$ ; the reason for this is as follows: The 30th grade separates the man who ranks 30th in a class of 100 men from his neighbour who ranks 31st. It does so for the same reason that grade  $1^\circ$  separates the man who ranks 1st from the man who ranks 2nd. Now, the 30th man failed in the test, and the 31st succeeded. Therefore the grade corresponding to bare success lies between them, and is the same as grade  $30^\circ$ .

It was moved by Professor FLOWER, seconded by Mr. HYDE CLARKE, and unanimously resolved:—

“That the thanks of the meeting be given to the President for his address, and that it be printed in the Journal of the Institute.”

The Scrutineers gave in their Report and the following gentlemen were declared to be duly elected to serve as Officers and Council for the year 1889:—

*President.*—John Beddoe, Esq., M.D., F.R.S.

*Vice-Presidents.*—Hyde Clarke, Esq.; J. G. Garson, Esq., M.D.; Prof. A. H. Keane, B.A.

*Secretary.*—F. W. Rudler, Esq., F.G.S.

*Treasurer.*—A. L. Lewis, Esq., F.C.A.

*Council.*—G. M. Atkinson, Esq.; E. W. Brabrook, Esq., F.S.A.; C. H. E. Carmichael, Esq., M.A.; Rev. R. H. Codrington, D.D.; J. F. Collingwood, Esq., F.G.S.; J. G. Frazer, Esq., M.A.; T. V. Holmes, Esq., F.G.S.; H. H. Howorth, Esq., M.P., F.S.A.; Prof. A. Macalister, F.R.S.; R. Biddulph Martin, Esq., M.A.; Prof. Meldola, F.R.S.; Right Hon. the Earl of Northesk, F.S.A.; C. Peek, Esq., M.A.; F. G. H. Price, Esq., F.S.A.; C. H. Read, Esq., F.S.A.; Prof. A. H. Sayce, M.A.; H. Seebohm, Esq., F.L.S.; Oldfield Thomas, Esq., F.Z.S.; M. J. Walhouse, Esq., F.R.A.S.; General Sir C. P. Beauchamp Walker, K.C.B.

A vote of thanks to the retiring Vice-President, the retiring Councillors, the Auditors, the Scrutineers, the Secretary and the Treasurer was moved by Sir BEAUCHAMP WALKER, seconded by Mr. T. V. HOLMES, and carried unanimously.

## ANTHROPOLOGICAL MISCELLANEA.

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### PARSEE BURIAL *in* INDIA.

The following account of a Parsee burial in India was given me by an eye witness, and I think may prove of interest to members of the Institute :—

A Parsee having died at a spot too far removed from any "Tower of Silence" to allow of his being conveyed to one, a grave was dug for him close to the sea shore. In this the body was laid at full length in ordinary apparel. Then two men, presumably the nearest relatives of the deceased, tied together by the hands, advanced towards the open grave, one walking to the right of it and the other to the left, till they arrived at the centre of the grave. Then a man advanced and with a knife severed the cord which bound the two. After this, a dog was brought and held over the grave, being made to look at the corpse; and this apparently concluded the ceremony. A. W. BUCKLAND.

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### TABLES of OBSERVATIONS.

By FRANCIS GALTON, F.R.S.

The following observations are printed for the use of those who desire to investigate the relations of the various measurements of the same individuals, whether among themselves or in connection with birthplace, occupation, &c. The observations were made at the International Exhibition in 1884, with the same instruments, the same methods, and mostly by the same operator. They refer to male adults of the ages 23-26 and have been tabulated for me by Mr. J. H. Young, of the General Register Office, from the original documents. There were 518 available returns altogether, but I thought it better to limit the publication to the round number of 400 and to take the opportunity thereby afforded of weeding out all foreigners, or persons of abnormal antecedents or occupation, so that the remainder should be as homogeneous a group as circumstances admitted. I may add that the data used in my recent memoir on *Correlation* (Proc. Royal Soc., December, 1888) were entirely different to these. Consequently the present publication will afford useful material for checking the results arrived at in that memoir.

I did not care to enlarge the table by including other measurements that had been made at the same time. As much is printed as the page can conveniently hold, and the omitted measurements seem to be of secondary importance from the present point of view.

Age last birth-day.	Married or unmarried.	Eye Colour.	Birthplace.	Occupation.	Residence.	Breathing-capacity, inches.	Squeeze in lbs.		Span, inches.	Height from seat, inches.	Height without shoes, inches.	Weight,* lbs.
							Rt. hand.	Left hand.				
23	Unmar.	Brown	Fulwood, Lancashire	Clerk	Suburb	76	67	64	64.7	34.0	64.0	111.5
23	Unmar.	Blue	Portsmouth, Hants	Shipbroker	Suburb	214	91	80	74.0	38.7	72.2	143.0
23	Unmar.	Dark grey	Rochdale, Yorkshire	Hatter	Town	240	71	70	68.4	34.9	66.1	125.5
23	Unmar.	Dark grey	Newport, Salop	Schoolmaster	Suburb	280	79	76	68.0	36.6	68.6	146.0
23	Unmar.	Grey	Cambridge	Draper's assistant	Town	234	79	77	71.7	38.8	69.8	143.5
23	Unmar.	Blue grey	Oxford	Message	Town	228	87	81	69.3	36.6	67.5	143.0
23	Unmar.	Dark grey	Woolwich, Kent	Builder	Town	234	71	64	71.8	38.3	68.7	156.25
23	Unmar.	Brown	St. Thomas, North Devon	Clerk	Town	278	82	82	67.7	36.1	67.1	147.0
23	Unmar.	Blue	New Cross, Kent	Mercantile	Suburb	300	104	103	71.0	37.0	71.5	179.5
23	Unmar.	Blue	Paddington, Middlesex	Clerk	Town	260	87	88	72.6	37.1	71.8	145.0
23	Married	Blue	Paddington, Middlesex	Clerk	Town	252	91	90	72.8	37.6	71.2	143.75
23	Unmar.	Blue grey	Ealing, Middlesex	Clerk	Suburb	230	93	93	70.0	35.8	68.1	177.5
23	Unmar.	Brown grey	Knutsford, Cheshire	Surgeon	Country	250	73	82	70.3	34.8	68.3	155.5
23	Unmar.	Dark grey	Birmingham, Warwickshire	Schoolmaster	Suburb	164	86	75	68.2	35.6	67.2	142.0
23	Unmar.	Grey	London	Electrical engineer	Suburb	260	95	91	71.3	35.5	69.0	141.5
23	Unmar.	Blue grey	Middlesex	Engineer	Suburb	270	112	105	68.0	41.7	79.5	203.25
23	Unmar.	Blue grey	London	Land agent	Country	234	81	67	68.8	36.5	67.3	139.0
23	Unmar.	Grey	Sursey	Barrister	Town	238	94	81	70.2	37.0	68.3	156.5
23	Unmar.	Blue grey	Derby	Clerk	Town	238	61	60	68.6	33.5	64.5	118.0
23	Unmar.	Brown	Kent	Cook	Suburb	238	75	75	69.5	33.0	67.2	127.0
23	Unmar.	Green grey	Plymouth, Devonshire	Gentleman	Various	248	96	72	72.8	36.2	68.3	156.0
23	Unmar.	Hazel	West Lynn, Norfolk	Chemist's assistant	Suburb	204	78	83	65.9	35.3	65.4	129.5
23	Unmar.	Grey brown	Chaddesley, Worcestershire	Chemist and druggist	Town	234	88	87	72.0	37.1	70.7	143.25
23	Unmar.	Brown	York	Assistant in manufactory	Town	220	78	70	65.5	35.4	64.0	126.75
23	Unmar.	Brown	Camberwell, Surrey	Builder	Town	290	91	86	76.0	37.6	72.7	145.0
23	Unmar.	Grey brown	London	Student	Country	208	90	86	76.0	35.1	73.8	151.5
23	Unmar.	Grey	London	Builder	Suburb	278	80	80	77.0	38.2	72.0	164.0
23	Unmar.	Blue	Derby	Pattern maker	Country	180	69	63	63.5	33.3	62.6	121.0
23	Unmar.	Brown	City of London	Accountant	Town	174	75	64	61.25	33.3	62.3	129.0
23	Unmar.	Blue grey	Devonshire	Carpenter	Town	222	77	77	67.75	35.2	67.8	128.25
23	Unmar.	Brown grey	Westminster, Middlesex	Tailor	Town	206	72	68	70.0	34.2	66.0	132.25
23	Unmar.	Brown	London, Surrey	Builder	Town	232	86	80	76.0	37.7	72.3	147.0
23	Unmar.	Blue grey	London	Analyt. Chem. Teacher	Town	290	105	95	69.5	37.2	69.6	141.75
23	Unmar.	Brown	Birkenhead, Cheshire	Pawnbroker	Town	158	68	69	66.2	32.6	62.1	121.0
23	Married	Brown	Manchester, Lancashire	Teacher	...	234	91	97	71.1	37.0	67.2	141.5
23	Unmar.	Blue	Boston, Lincolnshire	Bank clerk	Country	270	75	72	71.6	35.6	67.6	146.25
23	Unmar.	Blue	London	Composer	Suburb	210	88	79	69.25	36.2	66.3	143.0
23	Unmar.	Grey	Dunstable, Beds	Carpenter	Town	212	84	84	73.5	35.0	68.5	148.75
23	Unmar.	Blue	Sheffield, Yorkshire	Architect's assistant	Town	206	76	85	66.75	35.8	65.2	123.0
23	Unmar.	Grey	Sheffield, Yorkshire	Architect's assistant	Town	174	77	77	66.0	34.8	62.9	110.5

\* The weight was taken in ordinary indoor clothing.

Age, Sex, Married or single	Eye Colour	Birthplace	Occupation	Residence	Breath- Capacity cubic inches	Squeezes in lbs.		Span, inches	Height from seat, inches	Height without shoes, inches	Weight, lbs.
						Rt. hand	Left hand				
25	Unmar- ried	Brown	...	...	218	82	72	86.5	35.4	65.5	132.5
25	Unmar- ried	Blue	...	...	226	78	80	70.5	36.5	65.5	142.5
25	Unmar- ried	Blue	...	...	198	71	62	67.0	34.7	65.8	125.25
25	Unmar- ried	Grey blue	...	...	188	76	75	88.5	37.1	69.2	155.25
25	Unmar- ried	Grey	...	...	222	71	73	88.5	35.1	66.8	154.0
25	Unmar- ried	Blue grey	...	...	218	69	72	70.8	36.0	67.5	143.0
25	Unmar- ried	Blue grey	...	...	172	68	69	85.0	34.7	65.3	137.0
25	Unmar- ried	Blue	...	...	228	80	75	70.7	35.7	68.2	137.5
25	Unmar- ried	Brown	...	...	230	112	108	70.25	38.0	69.7	181.5
25	Unmar- ried	Grey	...	...	250	88	77	71.5	37.4	70.1	147.0
25	Unmar- ried	Blue	...	...	182	83	80	88.8	34.9	66.2	131.0
25	Unmar- ried	Grey brown	...	...	184	71	67	67.2	34.8	65.4	134.75
25	Unmar- ried	Blue	...	...	238	72	72	64.2	35.3	64.6	135.25
25	Unmar- ried	Blue grey	...	...	306	79	75	69.5	38.0	69.7	169.25
25	Unmar- ried	Grey blue	...	...	318	102	97	72.3	36.4	69.5	174.5
25	Unmar- ried	Blue	...	...	184	89	78	86.25	36.4	63.9	145.0
25	Unmar- ried	Brown	...	...	220	97	91	68.4	35.9	68.7	155.5
25	Unmar- ried	Hazel brown	...	...	208	88	78	70.0	34.0	66.2	142.0
25	Unmar- ried	Brown	...	...	180	76	80	73.2	35.1	68.1	123.25
25	Unmar- ried	Blue	...	...	160	70	68	64.0	34.0	82.4	117.0
25	Unmar- ried	Grey brown	...	...	300	91	90	74.7	37.5	74.0	162.5
25	Unmar- ried	Blue	...	...	210	84	80	65.2	35.2	65.8	134.0
25	Unmar- ried	Brown grey	...	...	184	58	57	65.75	34.4	83.0	115.0
25	Unmar- ried	Blue grey	...	...	214	71	77	67.5	35.2	66.7	131.25
25	Unmar- ried	Blue	...	...	230	89	80	70.1	33.9	66.5	131.0
25	Unmar- ried	Blue	...	...	220	95	101	78.5	38.3	71.0	143.25
25	Unmar- ried	Blue grey	...	...	250	100	99	69.5	37.0	69.2	137.0
25	Unmar- ried	Blue	...	...	250	84	85	69.3	36.3	68.2	168.5
25	Unmar- ried	Blue grey	...	...	214	68	69	69.0	34.8	66.8	145.0
25	Unmar- ried	Grey blue	...	...	200	85	83	68.2	36.0	66.5	137.5
25	Unmar- ried	Grey	...	...	228	87	93	67.8	35.5	65.6	147.75
25	Unmar- ried	Grey	...	...	252	93	90	71.6	35.7	68.9	153.0
25	Unmar- ried	Blue grey	...	...	230	85	75	70.0	37.9	69.2	180.5
25	Unmar- ried	Blue grey	...	...	237	69	61	70.9	36.4	69.2	136.0
25	Unmar- ried	Hazel brown	...	...	248	92	82	71.8	36.1	69.3	155.5
25	Unmar- ried	Grey	...	...	238	89	69	67.0	34.8	66.4	163.0
25	Unmar- ried	Grey	...	...	298	95	88	70.8	38.1	67.2	146.0
25	Unmar- ried	Light blue	...	...	238	82	70	86.2	38.7	68.7	141.5
25	Unmar- ried	Blue	...	...	228	81	61	68.0	36.6	69.4	146.0
25	Unmar- ried	Brown	...	...	190	78	74	68.0	35.4	64.4	143.0

Age last birth- day.	Married last or un- married.	Eye Colour.	Birthplace.	Occupation.	Residence.	Breathing- Capacity, cubic inches.	Squeeze in lbs.		Span, inches.	Height from Seat, inches.	Height, without shoes, inches.	Weight, lbs.
							Rt. hand.	Left hand.				
23	Unmar.	Brown grey ..	Sheffield, Yorkshire	Clerk...	Town	200	76	65	64-0	35-1	53-4	109-5
23	Unmar.	Grey blue ..	Hants	Servant	Country	300	81	75	71-4	38-1	68-7	145-75
23	Unmar.	Blue grey ..	London	Harriator	Town	260	87	78	74-5	38-3	71-2	167-25
23	Unmar.	Grey blue ..	Brighton, Sussex	Provision merchant	Town	224	95	94	71-25	37-7	69-6	157-0
23	Unmar.	Grey blue ..	Brentwood, Essex	Printer	Suburb	222	81	77	71-25	36-8	68-6	142-5
23	Unmar.	Grey ..	Bromley, Kent	Chemist	Town	200	70	61	67-0	35-6	68-6	128-25
23	Unmar.	Grey blue ..	Northampton	Engineer	Town	200	72	72	68-1	35-8	68-2	134-0
23	Unmar.	Hazel	Bewick-on-Tweed	Letter carrier	Town	238	85	75	69-0	36-8	67-8	140-0
23	Unmar.	Brown	London	Bank clerk	Town	218	103	79	69-0	37-2	68-2	138-0
23	Unmar.	Blue ..	Clapham, Surrey	Theological student	Suburb	230	86	78	66-75	34-0	65-3	139-5
23	Unmar.	Brown	Weybridge, Surrey	Surgeon	Town	307	87	88	72-5	37-1	70-3	154-0
23	Unmar.	Grey brown ..	Petworth, Sussex	Fvangelist	Town	198	94	83	74-2	35-6	70-0	164-5
23	Unmar.	Hazel	Chelsea, Middlesex	Clerk	Suburb	185	74	72	68-5	33-8	63-9	120-5
23	Unmar.	Blue ..	Liverpool, Lancashire	Shipowner	Suburb	180	74	74	67-0	35-5	63-9	151-0
23	Unmar.	Blue ..	London	Stationer	Town	184	86	75	72-5	35-0	71-5	152-5
23	Unmar.	Blue ..	Keighley, Yorkshire	Manufacturer	Country	178	85	72	64-7	34-8	64-7	130-5
23	Unmar.	Brown grey ..	Edinburgh	Merchant	Town	220	95	81	69-5	34-0	68-2	153-25
23	Unmar.	Grey blue ..	London	Solicitor	Town	278	98	95	70-5	36-2	68-0	158-0
23	Unmar.	Blue ..	London	Curator (museum)	Town	210	85	80	68-25	36-3	67-0	143-0
23	Unmar.	Blue ..	London	Clerk	Suburb	218	88	82	65-7	34-7	70-8	154-0
23	Unmar.	Dark blue ..	London	Clerk...	Town	290	95	84	70-5	36-8	69-3	138-75
23	Unmar.	Grey blue ..	Gravesend, Kent	Clerk...	Suburb	168	81	81	66-5	36-0	62-75	129-5
23	Unmar.	Blue ..	Edinburgh	M.B.	Town	270	83	87	70-5	36-7	68-1	139-25
23	Unmar.	Blue grey ..	Kensington, Middlesex	Civil Service	Suburb	140	80	80	68-5	35-0	67-0	147-0
23	Unmar.	Blue ..	Melton, Yorkshire	Clerk...	Suburb	130	45	65	65-0	33-6	63-0	131-5
23	Unmar.	Brown	Manchester, Lancashire	Engineer	Suburb	180	85	84	67-5	34-9	65-2	124-0
23	Unmar.	Brown	Camden Town, Middlesex	Clerk	Suburb	170	79	82	65-5	33-6	64-25	115-0
23	Unmar.	Light blue grey	Enfield, Middlesex	Clerk...	Suburb	184	89	85	67-5	34-75	67-0	140-0
23	Unmar.	Dark blue ..	Sydenham, Kent	Clerk...	Country	225	82	83	73-25	36-0	68-75	161-5
23	Unmar.	Brown grey ..	Dublin	Physician	Town	236	80	81	74-5	35-8	72-5	152-0
23	Unmar.	Dark blue ..	Dublin	Clerk	Suburb	219	85	82	67-0	33-5	64-0	119-0
23	Unmar.	Brown	Hythe, Kent	Civil Service clerk...	Suburb	184	82	90	68-0	36-7	68-1	139-5
23	Unmar.	Grey blue ..	Edmonton, Middlesex	Lecturer	Country	244	73	74	68-0	35-5	67-2	141-0
23	Married	Grey grey ..	Tooting, Surrey	Grocer	Suburb	118	81	88	70-5	34-5	66-0	142-25
23	Unmar.	Light brown grey	Hastings, Sussex	Civil Service	Suburb	208	75	72	67-3	34-9	68-0	127-5
23	Unmar.	Brown	Manchester	Joiner	Suburb	240	81	85	70-5	36-7	67-0	139-25
23	Unmar.	Grey ..	Smethcot, Salop	Civil engineer	Country	186	90	83	76-75	35-7	71-8	145-5
23	Unmar.	Blue ..	City	Clerk...	Suburb	190	78	71	70-0	35-2	67-2	135-0
23	Unmar.	Brown	Manchester, Lancashire	India rubber manufacturer	Town	216	96	78	70-0	36-8	68-3	130-0
23	Unmar.	Blue ..	Aylesbury, Bucks	Draper's shopman...	Country	196	84	87	64-3	34-3	64-4	124-5

Age	Married or unmarried	Eye Colour	Birthplace	Occupation	Residence	Breathing- Capacity onbic inches	Squeeze in lbs.		Span Inches	Height from Seat Inches	Height without shoes Inches	Weight lbs.
							Rt. hand.	Left hand.				
23	Unmarr.	Grey blue	Wakefield, Yorkshire	Clerk	Town	216	66	63	72 0	36 3	71 3	154.25
23	Unmarr.	Brown grey	Brighton, Sussex	Engineer	Country	220	100	66	71 2	36 2	71 6	145.25
23	Unmarr.	Blue	London	Chemist	Suburb	208	87	96	66 3	36 0	67 7	146.25
23	Unmarr.	Grey blue	Reading, Berkshire	Chemist	Town	242	87	87	69 5	35 2	68 8	161.75
23	Unmarr.	Grey	Cambridge	Butler	Town	202	76	74	70 0	35 0	66 5	116.0
23	Unmarr.	Grey	Bucks	Civil engineer	Cy. town	270	80	80	68 5	36 8	70 0	147.25
23	Unmarr.	Grey blue	London	Auctioneer	Town	290	65	91	75 0	36 9	72 3	164.0
23	Unmarr.	Grey	Mill End, Middlesex	Librarian	Town	218	81	71 5	71 5	36 3	66 7	144.0
23	Unmarr.	Light brown	Norwich	Teacher	Suburb	208	86	81	63 9	35 4	62 5	120.75
23	Unmarr.	Brown	Pewsey, Wiltshire	Accountant	Town	172	68	71	68 0	36 8	69 0	131.5
23	Unmarr.	Hazel	Plymouth, Devonshire	H. M. dockyard	Town	208	74	71	66 5	66 0	67 4	132.5
23	Unmarr.	Brown	Lincrick	Clerk	Town	198	70	65	66 5	36 0	66 0	126.4
23	Unmarr.	Brown grey	St. Mary Cray, Kent	Teacher	Town	223	99	65	71 4	38 8	68 8	148.5
23	Unmarr.	Brown grey	Bealings, Suffolk	Schoolmaster	Country	220	86	88	69 5	35 1	67 5	137.5
23	Unmarr.	Brown grey	Durham	Clerk	Town	220	77	87	73 0	37 0	70 75	153.5
23	Unmarr.	Blue	Turnworth, Dorset	—	Town	186	71	61	69 5	36 75	69 2	141.5
23	Married	Grey	London	Clerk	Suburb	220	68	92	74 5	38 3	69 8	236.0
23	Married	Grey brown	London	Clerk	Country	190	76	83	69 0	35 0	66 5	132.5
23	Unmarr.	Grey	London	Surveyor	Country	220	85	86	72 0	36 4	68 3	149.0
23	Unmarr.	Grey brown	Scarborough, Yorkshire	Chemist	Town	218	68	82	69 5	35 8	67 6	142.0
23	Unmarr.	Brown grey	Portsmouth, Hants	Clerk	Suburb	226	79	74	72 5	35 2	69 5	132.5
23	Unmarr.	Grey	Liverpool, Lancashire	Chemist	Town	236	84	94	67 25	34 8	65 0	138.0
23	Unmarr.	Grey green	Huntingdon	Clerk	Town	186	63	49	69 0	67 7	70 5	146.25
24	Unmarr.	Brown	Bury St. Edmunds, Suffolk	Mechanical engineer	Town	188	74	77	69 8	36 0	68 4	138.5
24	Unmarr.	Brown grey	Walsall, Staffordshire	Letter carrier	Town	200	76	83	63 25	34 6	64 0	143.0
24	Unmarr.	Grey	Walsall, Staffordshire	Saddle-tree maker	Suburb	161	72	66	67 8	34 3	65 3	133.5
24	Unmarr.	Blue grey	Wakefield, Yorkshire	Schoolmaster	Country	230	63	71	71 0	37 5	70 2	122.0
24	Unmarr.	Blue grey	London	Scientific chemist	Suburb	246	80	72	69 5	34 8	66 7	136.0
24	Married	Grey blue	London	Soldier	Town & cy.	234	76	65	74 9	37 2	72 0	180.0
24	Married	Grey brown	Nottingham	Plasterer	Suburb	222	75	73	76 8	37 5	71 8	166.5
24	Unmarr.	Grey brown	London	Electrical engineer	Suburb	314	80	68	76 0	68 7	72 6	162.5
24	Unmarr.	Grey brown	London	Stock Exchange	Suburb	264	85	86	65 2	36 0	65 1	137.75
24	Unmarr.	Brown grey	Hoxton, Middlesex	Printer	Town	242	76	70	70 25	67 1	68 4	138.0
24	Unmarr.	Blue grey	Newmarket, Cambridgeshire	Outfitter	Town	250	62	94	72 5	35 6	66 4	137.0
24	Unmarr.	Light blue	Forismouth, Hants	Clerk	Suburb	220	87	74	64 75	35 8	64 0	122.0
24	Unmarr.	Grey blue	London, Kent	Drapers' buyer	Town	164	67	66	64 8	35 2	66 6	116.5
24	Unmarr.	Blue grey	London	Clerk	Town	268	86	80	66 7	37 5	70 7	204.75
24	Unmarr.	Blue	Winterton, Lincolnshire	Minister, Congregational	Suburb	254	90	96	68 25	37 1	67 6	154.25
24	Unmarr.	Brown	Brighton, Sussex	Builder	Town	186	68	84	68 5	36 0	67 2	123.0
24	Unmarr.	Grey blue	Wakefield, Yorkshire	Bar student	Town	238	80	87	72 1	38 0	70 3	146.25

Age last birth-day.	Married or unmarried.	Eye Colour.	Birthplace.	Occupation.	Residence.	Breathing Capacity, cubic inches.	Squeeze in lbs.		Span, inches.	Height from Seat, inches.	Height without shoes, inches.	Weight, lbs.
							Rt. hand.	Left hand.				
24	Unmar.	Brown	London...	Mercantile	Town	274	100	97	73.5	37.4	69.7	159.0
24	Unmar.	Blue	Windsor, Berkshire	Professor of music	Country	210	83	80	67.75	36.1	65.4	183.5
24	Unmar.	Blue	Portsmouth, Cornwall	Casualty	Town	180	87	66	65.0	34.7	67.2	122.5
24	Unmar.	Brown	London...	Architect	Town	228	84	84	69.3	34.9	67.6	141.5
24	Unmar.	Blue	Aberdare, Glamorganshire	Assistant from merchant	Town	186	82	81	72.0	36.0	68.0	138.0
24	Unmar.	Brown grey	Sydenham, Kent	Student	Suburb	250	89	97	73.0	38.7	72.0	158.75
24	Unmar.	Brown	Middlesex	Engineer	Suburb	302	92	95	72.8	38.1	71.6	170.75
24	Unmar.	Brown grey	Kensington, Middlesex	Clerk	Suburb	218	69	75	68.6	36.2	68.6	119.0
24	Unmar.	Brown	Manchester, Lancashire	Clerk	Suburb	204	64	70	64.0	35.4	66.4	126.5
24	Unmar.	Grey	London...	Commercial clerk	Suburb	224	75	73	68.2	34.5	66.7	131.75
24	Unmar.	Blue grey	London	Clerk	Suburb	250	96	97	73.0	36.0	69.5	150.5
24	Unmar.	Brown	London	Electrician	Suburb	309	76	76	71.7	35.5	70.2	148.0
24	Unmar.	Blue grey	Holton, Lancashire	Electrician	Town	246	85	90	72.7	37.8	71.4	143.0
24	Unmar.	Brown	Leeds, Yorkshire	Surgeon	Town	228	79	88	72.5	36.5	71.0	129.75
24	Unmar.	Hazel	London	Civil engineer	Suburb	192	96	88	67.0	34.8	65.0	140.75
24	Unmar.	Blue	London	Clerk	Country	340	101	101	74.0	38.0	72.6	186.75
24	Unmar.	Blue	Devizes, Wiltshire	Draper	Cy. town	230	76	76	69.1	35.0	67.0	119.0
24	Unmar.	Blue grey	London	Barriater	Town	258	101	93	71.8	37.3	71.2	167.0
24	Unmar.	Brown	Liverpool, Lancashire	Government clerk	Town	250	78	82	64.5	34.3	64.9	126.0
24	Unmar.	Grey	Galnaborough, Lincolnshire	Clergyman	Town	208	108	104	65.9	37.4	67.8	145.25
24	Unmar.	Blue	Sheffield, Yorkshire	Steel manufacturer	Town	204	60	61	70.5	36.7	65.8	130.5
24	Unmar.	Brown grey	Leeds, Yorkshire	Architect	Country	228	64	63	65.0	35.0	65.6	131.0
24	Unmar.	Grey	Farnham, Surrey	Wine merchant	Town	224	88	95	72.5	36.9	70.2	176.0
24	Unmar.	Grey	Charteris, Cambridgeshire	Professor of music	Town	280	79	72	72.8	36.3	69.5	140.25
24	Unmar.	Brown	Boston, Lincolnshire	Solicitors' clerk	Town	236	81	70	70.5	36.2	69.2	151.75
24	Unmar.	Blue	London	Shipping agent	Suburb	204	82	78	66.5	34.1	64.6	120.0
24	Unmar.	Light brown	Mile End, Middlesex	Schoolmaster	Country	266	74	70	72.4	37.7	71.4	152.5
24	Unmar.	Grey blue	London	Clerk	Suburb	221	66	45	69.0	36.1	66.5	139.25
24	Unmar.	Grey blue	Sydenham, Kent	Schoolmaster	Country	226	76	77	67.8	35.3	66.3	127.5
24	Unmar.	Blue grey	Huddersfield, Yorkshire	Schoolmaster	Town	254	90	87	69.5	36.4	67.3	150.5
24	Unmar.	Hazel	Tovil, Kent	Postal telegraph clerk	Suburb	200	73	79	65.25	35.2	64.4	133.5
24	Unmar.	Brown	Peckham, Surrey	Missionary	Town	212	83	78	65.0	35.4	62.6	138.0
24	Unmar.	Hazel	Paddington, Middlesex	Chemist	Town	226	74	70	71.3	35.7	68.6	139.0
24	Unmar.	Grey	London	Goldsmith	Suburb	230	97	89	70.75	35.2	69.9	139.5
24	Unmar.	Blue	Lincolnshire	Teacher	Suburb	200	75	76	65.2	35.7	67.4	127.0
24	Unmar.	Blue	Workington, Cumberland	Analyst	Town	250	85	72	67.0	36.3	67.0	137.5
24	Unmar.	Blue	Hingham, Norfolk	Clerk General Post Office	Town	280	87	100	74.5	38.4	72.4	172.5
24	Unmar.	Blue	Elton, Lancashire	Clerk	Town	216	84	78	71.7	36.6	67.7	153.5
24	Unmar.	Blue	Frisol, Gloucestershire	Builder	Town	230	106	161	69.6	38.1	68.6	164.0
24	Unmar.	Blue	Gloucester	Clerk	Town	216	84	78	70.5	35.8	69.0	140.5

Age last day	Married or un- married	Eye Colour	Birthplace	Occupation	Residence	Breathing Capacity cubic inches	Squeeze in lbs.		Span Inches	Height from Seat Inches	Height without shoes Inches	Weight lbs.
							Rt. hand	Left hand				
24	Unmar.	Blue grey	Croydon, Surrey	Law clerk	Town	290	90	91	75.8	87.9	74.1	170.0
24	Unmar.	Hazel	Croydon, Surrey	Traveller	Suburb	186	68	64	67.1	84.9	65.6	128.5
24	Unmar.	Grey blue	Haydon, Herts	Nr.	Town	180	82	71	68.5	85.8	68.4	150.0
24	Unmar.	Grey	Clapham, Surrey	Draughtsman	Suburb	244	83	80	75.5	87.0	73.7	154.0
24	Unmar.	Blue	London	Commercial	Town	288	92	95	75.5	87.0	73.0	173.25
24	Unmar.	Blue	Halifax, Yorkshire	Civil Service clerk	Town	218	69	61	68.3	84.4	68.6	133.25
24	Unmar.	Brown grey	Glasgow	Teacher	Country	280	96	90	72.25	86.2	69.7	168.25
24	Unmar.	Grey	Buckingham	Stone carrier	Country	184	87	81	66.5	82.9	61.0	133.5
24	Unmar.	Hazel brown	Bristol, Gloucestershire	Clerk	Town	178	76	74	67.5	84.3	65.0	137.5
24	Unmar.	Brown grey	Bristol, Gloucestershire	Engineer's assistant	Town	246	95	96	73.25	86.5	69.2	152.25
24	Unmar.	Grey	London	Clerk	Suburb	218	76	67	67.5	85.2	67.3	134.25
24	Unmar.	Brown grey	London	Commercial clerk	Suburb	210	90	84	71.5	86.8	68.0	145.0
24	Unmar.	Brown	London	Clerk	Suburb	240	88	86	73.0	84.9	68.4	141.0
24	Unmar.	Brown	London	Surgeon	Town	266	89	81	67.3	85.4	64.3	144.25
24	Unmar.	Blue grey	Warwickshire	Engineer	Town	268	105	104	67.3	85.3	69.3	138.5
24	Unmar.	Grey	London	Minister	Country	276	84	68	72.0	85.9	69.5	143.5
24	Unmar.	Brown grey	Bro. Perry, Scotland	Manufacturer	Country	200	75	84	69.25	85.7	68.2	139.5
24	Unmar.	Grey	London	Clerk	Town	212	79	74	68.4	84.9	68.2	128.0
24	Unmar.	Grey	Isleworth, Suffolk	Merchant clerk	Town	166	83	75	64.5	84.3	65.5	118.0
24	Unmar.	Grey	London	Clerk	Suburb	288	95	88	73.0	85.4	69.5	150.0
24	Unmar.	Brown	London	Clerk	Town	184	89	101	74.0	86.1	70.4	180.25
24	Unmar.	Blue grey	London	Engineer	Suburb	240	90	92	70.5	83.0	70.2	151.75
24	Unmar.	Brown	Lambeth, Surrey	Hatter	Country	154	71	71	67.0	86.3	66.4	141.0
24	Unmar.	Blue grey	Gainsborough, Lincolnshire	Clergyman	Country	216	104	106	65.0	86.3	67.5	147.0
24	Unmar.	Blue	Groner, Norfolk	Clergyman	Country	210	101	99	72.0	86.8	68.7	154.0
24	Unmar.	Blue	Llandover, Carmarthenshire	Teacher	Town	182	65	74	65.25	83.9	64.8	121.5
24	Unmar.	Grey	St. Mary Cray, Kent	Clerk	Country	210	92	93	70.7	86.4	68.5	145.0
24	Unmar.	Brown	Doncaster, Yorkshire	Manufacturer	Suburb	232	84	85	70.5	87.2	68.8	149.5
24	Unmar.	Blue	London	Engineer	Town	224	100	92	68.7	84.9	67.2	137.25
24	Unmar.	Grey	Southampton	Examiner of Patents	Suburb	170	80	70	68.25	85.7	65.1	140.25
24	Unmar.	Blue	London	Artist	Town	266	76	77	73.0	86.7	72.2	141.5
24	Unmar.	Blue	Hexham, Northumberland	Law student	Town	198	83	81	70.5	84.2	66.7	122.0
24	Unmar.	Grey	London	Clerk	Town	208	93	83	68.25	87.0	68.4	168.5
24	Unmar.	Brown	Huddersfield, Yorkshire	Insurance clerk	Town	280	78	78	73.0	86.8	71.2	138.0
24	Unmar.	Blue	Reading, Berkshire	Woolen warehouseman	Suburb	232	87	86	72.5	88.2	73.1	157.5
24	Unmar.	Blue grey	Leicester, Leicestershire	Teacher	Town	288	103	104	73.0	88.2	73.25	163.0
24	Unmar.	Blue	Tranmere, Lancashire	Manufacturer	Country	244	91	84	70.0	86.5	68.4	154.5
24	Unmar.	Grey blue	Manchester, Lancashire	Dentist	Suburb	210	94	79	67.0	83.9	65.7	128.0
24	Unmar.	Brown	London	Mercantile	Town	168	80	75	64.5	83.5	63.25	122.5
24	Unmar.	Brown grey	Benfrew, Scotland	Marine engineer	Sea	198	104	102	73.5	85.8	67.2	154.0

Age at birth.	Married or un- married.	Eye Colour.	Birthplace.	Occupation.	Residence.	Breathing- Capacity cubic inches.	Squeeze in lbs.		Span. inches.	Height from Seat. inches.	Height without shoes. inches.	Weight. lbs.
day.							Rt. hand.	Left hand.				
24	Unmar.	Blue grey	London...	Civil engineer	Town	220	95	94	72.5	35.75	68.75	154.0
24	Unmar.	Light grey	Kensington, Middlesex	Clerk	?	164	74	75	66.5	34.8	67.0	131.0
24	Unmar.	Brown grey	Wing, Buckinghamshire	Law student	Suburb	182	103	100	72.0	36.7	69.7	152.75
24	Unmar.	Blue grey	London...	Clerk	Suburb	206	90	77	69.5	38.0	70.6	206.75
24	Unmar.	Brown	Mersham, Kent	Grocer	Country	236	77	72	68.5	34.3	65.3	124.5
24	Unmar.	Blue	Penzance, Cornwall	Secretary	Town	183	100	98	68.3	36.3	68.3	145.0
24	Unmar.	Blue	Maldstone, Kent	Clerk	Town	236	76	79	72.75	35.6	68.9	138.0
24	Unmar.	Grey	Hemel Hempstead, Herts	Compositor	Country	184	78	73	67.9	35.0	66.1	123.5
24	Unmar.	Blue grey	Bath, Somerset	Silversmith	Suburb	260	90	82	72.0	35.6	66.0	160.0
24	Unmar.	Brown	City	Butterman	Town	170	78	53	67.0	33.2	63.2	143.75
24	Unmar.	Grey	London...	Draughtsman	Town	184	61	59	68.75	35.4	66.8	131.0
24	Unmar.	Blue grey	Romsey, Hants	Medical Student	Town	224	98	83	75.5	37.1	71.6	151.5
24	Unmar.	Brown	Birmingham, Warwickshire	Clerk	Town	224	82	72	71.2	36.4	68.2	130.5
24	Unmar.	Dark brown	Montgomery	Architect	Country	175	94	89	70.9	35.1	68.8	145.75
24	Unmar.	Brown	Devon...	Saddler	Town	258	94	94	71.0	36.8	68.4	147.0
24	Unmar.	Brown	Tooting, Surrey	Brewer	Country	248	87	87	73.25	37.0	69.3	167.0
24	Unmar.	Green grey	Southwick, Sussex	Grocer	Country	216	84	76	67.7	32.6	63.5	140.0
24	Unmar.	Brown grey	Walton, Northamptonshire	Clerk	Town	298	88	86	70.0	35.2	69.7	148.0
24	Unmar.	Brown	Lincoln...	Engineer	Town	246	00	84	68.8	35.8	67.9	142.0
24	Unmar.	Brown	Enfield, Middlesex	Pawnbroker	Suburb	230	82	75	69.4	35.7	66.6	134.5
24	Unmar.	Dark grey	Nettlebed, Oxfordshire	Manager of pottery	Country	224	75	78	70.6	33.4	65.8	128.0
24	Unmar.	Brown grey	Portsmouth, Hants	Clerk	Suburb	196	78	79	66.0	33.3	63.3	120.0
24	Unmar.	Brown	Steney, Middlesex	Traveller	Suburb	228	83	81	70.7	35.3	68.0	142.75
24	Married	Brown	Lincoln...	Gentleman	Country	264	41	67	71.2	35.9	68.9	142.5
24	Married	Dark grey	Chichester, Essex	Jeweller	Town	242	69	67	70.8	36.5	68.3	137.25
24	Married	Grey brown	Northfleet, Kent	Dairyman	Country	200	61	66	70.2	35.1	68.1	132.0
24	Married	Blue	Sunderland, Durham	Jeweller	Town	164	71	64	67.0	33.8	63.0	122.25
24	Married	Blue	Bepford, Kent	Policeman	Suburb	196	81	81	66	34.0	71.8	165.5
24	Married	Hazel	Chelsea, Middlesex	Messenger	Town	240	88	77	68.2	36.4	69.1	154.75
24	Married	Grey	Chelsea, Middlesex	Fishmonger	Town	188	79	70	66.5	35.4	65.5	137.5
24	Married	Hazel	Devon	Mariner	?	208	93	90	69.0	35.0	68.2	161.5
24	Married	Grey	Exning, Suffolk	Oilman	Town	220	100	87	67.0	34.7	64.6	156.75
24	Married	Hazel	London...	Engraver on wood	Suburb	184	78	78	70.5	36.8	68.6	166.0
24	Married	Blue grey	Denham, Bucks	Hay salesman	Town	208	80	77	67.0	35.5	65.75	141.0
24	Married	Hazel brown	Market Rasen, Lincolnshire	Fish merchant	Town	208	92	92	69.5	36.2	68.0	142.5
24	Married	Blue	Waltham, Surrey	Sup. Refresh. Depart.	Town	236	92	80	75.4	36.8	73.2	147.25
24	Married	Blue grey	Parham, Surrey	Stebman	Town	264	76	68	69.5	35.4	66.6	146.5
24	Married	Blue grey	London...	Clerk	Suburb	266	98	93	73.75	36.6	69.2	144.5
24	Married	Blue	Waltham, Surrey	Sup. Refresh. Depart.	Town	246	96	90	75.5	36.9	73.0	147.75
24	Married	Blue	Bristol, Gloucestershire	Traveller	Town	174	81	86	72.5	36.7	69.6	146.0

Age at birth. day.	Married or un- married.	Eye colour.	Birthplace.	Occupation.	Residence.	Breath- Capacity, cubic inches.	Squeeze in lbs.		Span. Inches.	Height from seat. Inches.	Height without shoes. Inches.	Weight. lbs.
							Rt. hand.	Left hand.				
24	Married	Dark brown	London	Clerk	Suburb	185	88	90	67-0	34-9	63-2	132-5
24	Married	Blue grey	London	Magistrate's clerk	Town	260	93	92	72-8	38-0	72-2	161-0
24	Married	Brown	South Shields, Durham	Miller	Town	240	83	79	66-0	37-1	67-6	139-0
24	Married	Brown	Suburb, Suffolk	Compositor	Town	168	73	81	67-8	35-5	67-1	144-75
24	Unmarried	Brown	Lambeth, Surrey	Printer	Town	208	68	75	75-5	38-5	73-5	177-6
25	Unmarried	Hazel	Swansea, Glamorganshire	Meriner	?	328	85	88	75-75	38-6	74-2	169-25
25	Unmarried	Brown	Plymouth, Devonshire	Printer and stationer	Town	244	89	88	68-8	37-7	68-7	168-0
25	Unmarried	Blue grey	London	Barkeeper	Town	304	78	80	75-0	36-5	71-5	203-5
25	Unmarried	Grey	London	Surgeon	Suburb	305	99	98	71-5	37-0	69-1	157-0
25	Unmarried	Grey	Bucks	Police man	Town	280	93	89	76-0	38-6	73-1	196-5
25	Unmarried	Brown	East Peckham, Kent	Book keeper	Suburb	—	83	86	67-5	34-6	66-3	117-75
25	Unmarried	Hazel	Aberdeen	Clerk	Suburb	222	72	77	70-1	36-1	69-6	141-0
25	Unmarried	Brown grey	Stammore, Middlesex	Gentleman	Country	300	65	67	77-2	39-5	75-8	186-75
25	Unmarried	Brown grey	Arbroath, Scotland	Wood turner	Town	178	78	75	69-25	35-8	65-8	127-5
25	Unmarried	Hazel	Bedford	Lithographer	Town	236	83	77	64-6	35-3	64-7	135-5
25	Unmarried	Hazel	Manchester, Lancashire	Schoolmaster	Suburb	192	70	56	67-75	38-2	68-1	141-75
25	Unmarried	Grey	Barnstaple, Devonshire	Grate manufacturer	Cy. town	198	93	110	71-0	35-9	69-3	163-75
25	Unmarried	Brown	Chelsea, Middlesex	Art master	Town	160	58	60	65-6	35-6	63-7	136-5
25	Unmarried	Grey brown	Winchester, Hants	Gentleman	Country	230	85	83	74-0	36-1	68-1	151-0
25	Unmarried	Blue	Yorkshire	Soap maker	Town	170	70	72	70-0	35-4	65-5	141-75
25	Unmarried	Blue	Bourne End, Buckinghamshire	Clerk	Town	310	87	86	73-8	37-3	72-0	167-0
25	Unmarried	Blue	Okebrook, Derby	Tutor	Town	204	61	70	68-5	34-0	63-8	131-0
25	Unmarried	Hazel	Wellingbro., Northamptonshire	Baker	Town	210	68	62	69-5	34-6	65-5	134-0
25	Unmarried	Blue grey	Norfolk	Schoolmaster	Country	204	72	70	66-5	35-9	66-4	129-0
25	Unmarried	Brown	Great Yarmouth, Norfolk	Solicitor	Town	192	64	33	70-3	35-3	66-5	155-0
25	Unmarried	Light hazel	Maldstone, Kent	Solicitor	Town	296	81	83	71-3	35-5	69-4	160-25
25	Unmarried	Grey	Perth	Joiner	Country	234	89	88	67-2	35-4	65-6	142-5
25	Unmarried	Hazel	London	Schoolmaster	Suburb	120	76	64	69-0	35-5	68-8	123-5
25	Unmarried	Blue grey	Charlton, Kent	Engineer	Country	188	80	77	74-75	36-4	67-5	170-0
25	Unmarried	Brown	London	Shop assistant	Suburb	170	71	65	65-2	34-1	63-3	131-75
25	Unmarried	Brown	Upton	Architect	Town	244	61	72	67-6	34-0	65-8	126-0
25	Unmarried	Blue grey	London	Accountant	Suburb	204	79	71	66-25	35-9	66-4	128-5
25	Unmarried	Grey blue	Dundee, Scotland	Art teacher	Town	264	80	67	69-0	36-5	67-6	140-25
25	Unmarried	Dark grey	Kirkby Overblow, Yorkshire	Tutor	Country	268	97	96	70-6	35-3	68-6	158-0
25	Unmarried	Blue grey	Titchmarsh, Northamptonshire	Schoolmaster	Suburb	218	78	54	67-25	35-3	66-0	130-0
25	Unmarried	Blue grey	Battle, Sussex	Stationer	Country	200	82	73	72-4	36-9	71-3	171-25
25	Unmarried	Hazel brown	Brighton, Sussex	Stationer	Country	302	82	69	71-1	33-1	71-0	164-25
25	Unmarried	Grey	Harrow, Middlesex	Tutor	Suburb	272	94	74	70-5	34-2	66-8	139-0
25	Unmarried	Grey	Edinburgh	Butcher	Town	280	88	79	72-2	35-7	67-8	143-0
25	Unmarried	Blue	London	Engineer	Suburb	240	96	85	70-25	37-0	67-9	141-75

Age last birth-day.	Married or unmarried.	Eye Colour.	Birthplace.	Occupation.	Residence.	Breathing Capacity, cubic inches.	Squeeze In lbs.	Span, inches.	Height without shoes, inches.	Height from soles, inches.	Weight, lbs.
25	Unmar.	Grey ..	London ..	Commercial ..	Town ...	260	Rt. hand. 97	71.1	36.0	70.2	147.25
25	Unmar.	Grey blue	Paddington, Middlesex	Medical student.	Town ...	218	95	72.6	34.9	68.0	170.0
25	Unmar.	Brown	Plymouth, Devonshire ..	Mariner	Town ...	210	93	69.2	33.1	66.8	159.5
25	Unmar.	Hazel	Dublin ..	Surgeon	Town ...	248	81	71.0	37.0	69.8	189.0
25	Unmar.	Dark grey	London ..	Insurance collector	Town ...	260	82	66.8	34.9	64.8	149.0
25	Unmar.	Blue	Weymouth, Dorset	Tutor	Country	208	83	67.3	34.5	65.2	188.0
25	Unmar.	Grey brown.	Kenilworth, Warwickshire	Manufacturer	Town ...	188	72	66.0	34.1	64.5	115.0
25	Unmar.	Hazel brown	Edinburgh ..	Cotton broker	Suburb ...	258	85	72.0	36.9	71.2	150.25
25	Unmar.	Brown	London ..	Mercantile	Town ...	290	98	73.5	37.4	67.5	167.75
25	Unmar.	Grey brown.	Bilston, Staffordshire ..	...	Town ...	218	68	68.5	34.1	65.8	129.5
25	Unmar.	Blue ..	Sutton Bridge, Lincolnshire	Accountant.	Country	196	74	72.4	35.0	68.9	138.5
25	Unmar.	Grey blue	Uttoxeter, Staffordshire	Bank clerk	Town ...	206	66	65.8	35.8	65.8	129.25
25	Unmar.	Brown	Coleraine, Ireland	Clerk.	Country	164	67	68.2	35.2	66.7	136.75
25	Unmar.	Grey ..	Sevenoaks, Kent	Accountant.	Tn. & cy.	160	77	71.75	35.8	69.1	138.0
25	Unmar.	Brown	London ..	Tea dealer	Town ...	190	95	70.5	38.0	69.5	160.0
25	Unmar.	Brown grey	Harborne, Warwickshire	Artist	Town ...	239	99	70.5	36.8	70.7	166.25
25	Unmar.	Brown	Denbighshire	None..	Suburb ...	226	84	67.0	36.5	66.7	130.0
25	Unmar.	Blue	Burton on Trent, Staffordshire	Engineer	Town ...	180	73	68.5	34.7	64.2	119.75
25	Unmar.	Grey blue	Pirbright Hill, Middlesex	...	Town ...	78	—	67.0	35.7	65.8	126.0
25	Unmar.	Blue ..	Aberystwith, Cardiganshire	Chemist	Town ...	184	80	68.0	35.8	66.3	120.75
25	Unmar.	Grey ..	London ..	Teacher	Suburb ...	200	91	69.5	35.5	66.7	137.25
25	Unmar.	Blue ..	Bermansley, Surrey	Salesman	Town ...	240	92	70.25	36.4	68.4	166.0
25	Unmar.	Blue ..	Manchester, Lancashire	Clerk..	Suburb ..	184	60	64.7	34.8	64.5	107.25
25	Unmar.	Brown	Newton Longville, Bucks	Greygman.	Country	218	90	71.0	36.5	68.7	160.75
25	Unmar.	Grey blue	Oxford	Greygman.	Town ...	288	101	71.25	37.7	71.2	167.5
25	Unmar.	Hazel	Aberdeenshire	Lecturer	Town ...	220	67	69.6	36.0	68.3	137.5
25	Unmar.	Brown grey.	Huddesdon, Hertfordshire	Clerk..	Town ...	178	68	63.5	34.2	62.2	133.75
25	Unmar.	Brown	Kuthin, Denbighshire	None..	Suburb ..	250	75	66.5	36.0	67.0	130.0
25	Unmar.	Grey blue	London ..	Tailor	Country	244	96	67.0	35.3	65.8	141.0
25	Unmar.	Grey blue	London ..	Engineer	Town ...	240	96	72.0	35.0	68.0	166.0
25	Unmar.	Blue grey	Derby ..	Lecturer on chemistry	Town ...	198	87	68.5	36.0	68.0	147.5
25	Unmar.	Brown grey.	London ..	Surgeon	Suburb ...	240	109	73.0	36.5	71.5	182.0
25	Unmar.	Blue ..	E. Preston, Sussex	Estate agent	Country	260	74	72.2	36.5	69.0	140.0
25	Unmar.	Grey ..	Gamberwell, Surrey	Accountant.	Town ...	170	89	72.25	35.4	69.1	149.5
25	Unmar.	Brown grey.	London ..	Engineer's draughtsman.	Suburb ...	244	76	70.5	35.0	68.0	132.25
25	Unmar.	Grey ..	Bath, Somerset	Solicitor	Suburb ..	220	87	67.75	36.7	67.1	149.0
25	Unmar.	Grey ..	London ..	Servant	Town ...	170	67	68.75	34.7	66.1	141.5
25	Unmar.	Hazel	Briggwater, Somerset	Schoolmaster	Country	200	90	72.0	37.8	68.2	162.0
25	Unmar.	Brown grey.	Oxfordshire	Solicitor	Suburb ...	230	106	75.4	34.6	71.4	151.0
25	Unmar.	Grey blue	Jersey ..	Clerk..	Town ...	180	78	68.3	36.7	66.7	128.5

Age.	Sex.	Eye colour.	Birthplace.	Occupation.	Residence.	Breathing Capacity.		Squeeze in lbs.		Span.	Height without shoes.	Weight.
						cu in.	inches.	Rt. hand.	Left hand.			
35	Unmar.	Grey	London	Clerk.	Town	192	64.9	69	54	64.9	64.1	128.5
35	Unmar.	Blue	High Wycombe, Bucks	Ironmonger	Town	217	71	71	71	71.8	68.7	141.5
35	Unmar.	Blue grey	Dover, Kent	Officer R.H.A.	Country	232	109	109	60	78.6	75.6	166.25
35	Unmar.	Blue	Dover, Kent	Draper	Town	224	89	89	70	70.25	68.8	129.0
35	Unmar.	Light blue	Swansea, Glamorganshire	Timber importer	Town	222	78	78	68	68.6	63.9	140.0
35	Unmar.	Light blue	Sunderland, Durham	Parson	Town	284	95	95	75.1	75.1	73.8	163.5
35	Unmar.	Brown grey	Colchester, Essex	Clerk	Town	300	91	91	84	74.3	73.0	162.5
35	Unmar.	Grey	London	Clerk	Town	284	84	84	72.7	72.7	69.8	143.5
35	Unmar.	Grey	Northampton	Student	Country	220	88	88	65.8	65.8	68.3	167.0
35	Unmar.	Brown	Lambeth, Surrey	Government clerk	Suburb	224	79	79	71.5	71.5	68.6	167.0
25	Unmar.	Light grey	Marlebone, Middlesex	Printer	Town	182	71	71	69.25	69.25	67.9	134.0
25	Unmar.	Blue	Norton Bavant, Wiltshire	Schoolmaster	Town	194	83	83	66.6	66.6	66.8	140.75
25	Unmar.	Blue	Croydon, Surrey	Mercantile clerk	Town	204	85	85	72.6	72.6	69.6	149.0
25	Unmar.	Brown	Secroft, Yorkshire	Clorgyman	Suburb	240	89	89	69.5	69.5	66.2	148.5
25	Unmar.	Grey blue	Reading, Berkshire	Surveyor	Suburb	248	89	89	65	74.0	70.0	159.75
25	Unmar.	Brown	Wrexham, Denbighshire	Analyst	Suburb	234	65	65	62	67.5	65.3	129.0
25	Unmar.	Grey brown	London	Clerk	Suburb	204	79	79	69.7	69.7	68.5	136.0
25	Unmar.	Blue	Leamington	Teacher	Town	290	92	92	82	71.5	70.9	177.0
25	Unmar.	Blue	London	Mercantile clerk	Town	272	87	87	71.5	71.5	72.1	149.25
25	Unmar.	Brown	Tunbridge, Kent	Solicitor	Country	246	77	77	73.2	73.2	70.6	141.0
25	Married	Light blue	Totnes, Devonshire	Schoolmaster	Suburb	278	63	63	75	76.75	71.0	136.5
25	Married	Brown	Shaftesbury, Dorsetshire	Furniture warehouseman	Suburb	244	97	97	84	68.5	68.5	145.5
25	Married	Grey	Teddington, Middlesex	Grocer	Suburb	180	86	86	82	70.0	65.7	166.0
25	Married	Brown	London	Manufacturer	Suburb	264	100	100	89	70.3	68.1	110.25
25	Married	Grey	Middlesex	Clerk	Town	240	89	89	83	73.8	71.5	136.25
25	Married	Brown	Essex	Cheese monger	Town	192	74	74	84.6	70.5	67.8	127.5
25	Married	Grey	London	Carpenter	Country	220	76	76	83	65.3	62.2	116.25
25	Married	Blue	Lambeth, Surrey	Police man	Town	302	78	78	68.5	68.5	69.5	155.25
25	Married	Blue	London	Electrical engineer	Town	320	86	86	73.2	73.2	72.9	168.0
25	Married	Blue grey	Ironbridge, Salop	Ironmonger	Suburb	320	100	100	74.0	74.0	71.2	189.5
25	Married	Brown grey	Harwich, Essex	Printer	Town	180	76	76	69.0	69.0	66.4	130.5
25	Married	Grey blue	Cambridge	Pastory cook	Town	260	70	70	86.1	86.1	66.8	134.25
25	Married	Blue grey	Richmond, Surrey	Electrician	Tn. & oy.	286	83	83	71.2	71.2	63.2	133.0
25	Married	Grey	Dundee	Telegraphist	Town	236	80	80	70.0	68.6	68.1	146.5
25	Married	Dark grey	Wallingford, Surrey	Chemist	Town	226	73	73	84	71.5	69.6	164.0
25	Married	Grey blue	Hampstead, Middlesex	Student	Suburb	234	96	96	76.0	76.0	72.3	166.5
25	Married	Brown	Rocheester, Kent	Architect	Town	210	80	80	70.5	70.5	69.7	135.75
25	Married	Blue	Wigan, Lancashire	Civil engineer	Town	186	79	79	70.0	70.0	65.5	124.25
25	Married	Dark blue	London	Barist	Town	298	102	102	77.9	77.9	71.3	152.75
25	Married	Grey brown	Clarksall, Middlesex	Warehouseman	Town	228	90	90	70.6	70.6	69.6	138.0

QUESTIONS on the MANNERS, CUSTOMS, RELIGION, SUPERSTITIONS, &c.  
of UNCIVILIZED or SEMI-CIVILIZED PEOPLES.

Drawn up by J. G. FRAZER, M.A., F.R.G.S., Trinity College,  
Cambridge.<sup>1</sup>

*Tribes.*—Are the natives divided into tribes, clans, or castes? Are these tribes, clans, or castes subdivided? Enumerate the tribes, &c. 2. Are the tribes, &c., distinguished by differences in dress, in the mode of wearing the hair, &c.? 3. What kind of names are borne by the tribes, clans, &c.? Are the names ever the names of animals, plants, or other natural objects? 4. Do the members of the tribe, clan, or caste regard as sacred the animal, plant, &c., from which they take their names? Do they refuse to kill and eat the animal or plant from which they take their name? (*N.B.*—The animal, plant, &c., which gives its name to a tribe, clan, or caste, and which is held sacred by the members of that tribe, clan, or caste, is called a *Totem*). 5. What do they think would happen to them if they were to kill or eat such animals or plants? Have they any stories as to the origin of the tribes, clans, or castes? and as to the connection of the tribes, &c., with their totems?

*Birth, Descent, Adoption.*—7. What ceremonies are observed at birth? 8. Is the mother secluded? Has she to observe any rules as to diet, &c., during pregnancy or after the birth? Is she regarded as unclean? and has she to perform any ceremonies before being readmitted to society? 9. Has her husband to observe any rules as to diet, &c., before or after the birth? Does he behave in any special way, or is subjected to any special treatment at such times? 10. How is the child named? Is there any ceremony like baptism? Any god-father or god-mother? 11. Are there any special observances in regard to infants whose elder brothers or sisters have died previously? 12. Are children ever killed at birth? Is there a regular custom of killing the first born or last born children? Are female infants killed rather than male infants, or *vice versa*? 13. When the father and mother belong to different tribes, clans, or castes, do the children take the name of the father's tribe, &c., or of the mother's? Are they reckoned to the tribe, &c., of the father, or to that of the mother? 14. Is adoption practised? With what ceremonies is it accompanied?

<sup>1</sup> These questions are being circulated among missionaries, travellers, and others who have a first-hand knowledge of savage tribes. A Spanish translation of them is being prepared for circulation in the Philippines and the Spanish-speaking republics of South America. Copies of the questions may be had on application to Mr. Frazer, Trinity College, Cambridge.

Mr. Frazer proposes to publish the results of his inquiries. Full acknowledgment will be made of those who may favour him with answers, and printed copies will be forwarded to them. It is probable that the answers will in most cases be published in this Journal. The first set of answers is expected to appear in the next number.

*Puberty.*—15. Are any ceremonies performed on lads at puberty? Describe such ceremonies fully. 16. Is there any pretence at such rites of killing the lad and then restoring him to life? 17. After these initiatory rites, are the lads forbidden to see women for a certain time? If so, why? 18. Do they at these or other times circumcise, knock out, chip, or file the teeth, bore the nose, distend the ears, insert rings in the lips, &c.? What reasons do they give for such practices? 19. Do they tattoo or raise cicatrices on their bodies at puberty or on other occasions? What patterns are tattooed or incised? On what parts of the body are they made? Drawings of the tattoo marks would be useful. 20. What ceremonies accompany the tattooing? 21. Are both men and women tattooed, or only men, or only women? 22. Do the tattoo marks serve as badges to distinguish tribes, clans, or castes? 23. Are any ceremonies performed on girls at puberty? 24. Is a girl secluded at her first menstruation? What rules has she to observe at such times? Is she allowed to see the sun or fire? 25. Are women generally secluded at menstruation? What rules have they to observe at these times? 26. What do they suppose is the cause of menstruation? What do they think would be the effect if a man were to see or touch a menstruous woman?

*Marriage.*—27. Is a man compelled, or is he forbidden to marry a woman of the same tribe, clan, or caste as himself? 28. In the case where persons of the same tribe, clan, or caste are not allowed to marry, are they allowed to have sexual intercourse without marriage, or would this be equally wrong? 29. Are any natural ill effects supposed to follow a breach of these sexual rules? Is any punishment inflicted on the offender by the members of the tribe, clan, or caste? 30. What are the forbidden degrees of consanguinity in relation to marriage? 31. May a man have several wives? (polygamy). 32. May a woman have several husbands? (polyandry). 33. What reasons do they give for the practice of polygamy or polyandry? 34. How does a man obtain a wife? By purchase, capture, or how? 35. Does a man take his wife to his own home, or does he live with his wife's family? 36. Do bride and bridegroom prepare for marriage by fasting, bleeding, keeping awake the night before marriage, or in other ways? 37. Describe the marriage ceremonies fully, including the ceremonies observed at bringing the bride into the house or hut of the bridegroom. 38. Is the bride veiled? Are there any ceremonies at veiling or unveiling her? 39. Is the bride or bridegroom ever represented at the marriage ceremony by a proxy or dummy? 40. Is there anything corresponding to bridesmaids and best men? 41. Are any ceremonies observed by bride and bridegroom on the day after marriage? 42. Does a man cohabit with his wife immediately after marriage, or does he refrain for a certain time, say several days or months? 43. Does he visit his wife only by stealth for some time after marriage? If so, why? 44. Is it required or permitted that the wife should be deflowered by a person other than her husband? or that after the marriage cere-

many she shall have connexion with other persons before she may cohabit with her husband? 45. Are there occasions on which men abstain from cohabiting with women, as during menstruation, pregnancy, after child-birth, till the child is weaned, previous to and during hunting, fishing, war, or other occasions? 46. Are there occasions when men exchange wives? 46A. What becomes of a widow? is she free to marry as she likes? have the relations of her late husband any rights over her? 47. May a man look at or speak to his mother-in-law? May a woman look at or speak to her father-in-law? 48. May brothers and sisters speak to each other?

*Disease and Death.*—49. What do they think are the causes of disease and death? 50. How do they try to cure disease? 51. If disease is thought to be caused by the presence of a demon or spirit in the sick person, how do they expel the demon or spirit? 52. What ceremonies take place at death? 53. How are the dead disposed of? 54. Is the ghost of the departed feared? Are any steps taken to propitiate the ghost or to prevent its return? 55. Are the persons who have handled the corpse regarded as unclean and obliged to purify themselves by means of fire, water, &c.? 56. Have the relations of the deceased (particularly the widow or widower) to observe any special rules for some time after the death? What is the mourning garb? 57. Are there any special customs or superstitions about the bones of the dead?

*Murder.*—58. Is a murder avenged by the relations of the murdered person? Are all members of the victim's tribe, clan, or caste bound to avenge his death? And are all members of the murderer's tribe, clan, or caste responsible? 59. Is compensation for homicide allowed? To whom is it paid, or how is it apportioned? 60. Is a murderer regarded as unclean, and has he to undergo purification before he is re-admitted to society? Are there any special rules as to his eating and drinking, his dress, the vessels he uses, &c.?

*Property and Inheritance.*—61. Is tribal or individual property in land recognised? 62. What are the rules of the descent of property? Does a man's property descend to his children, or to his brothers, or to the children of his sisters? 63. Do women inherit property? 64. Does the youngest child ever succeed in preference to the elder?

*Fire.*—65. How is fire obtained? Is it lighted when required or kept always burning? 66. Is it solemnly extinguished on certain occasions (as after a death, during a drought, at harvest, midsummer, &c.), and a new fire made? 67. Have they any superstitions regarding fire? Any story of its origin?

*Food.*—68. Do they eat everything? Or are certain foods forbidden? Are some foods forbidden (a) to every one without distinction; (b) to members of particular tribes, clans, or castes; (c) to women but not to men, or *vice versa*; (d) on certain occasions, as after a death, during pregnancy, war-time, hunting, fishing, harvest, &c.; (e) at certain periods of life (childhood, puberty,

adult years, &c.)? What are the foods thus forbidden? reasons do they give for the prohibitions? 69. Do men and women eat together? And if not, why not? 70. Do children with grown-up people? 71. Does each person eat apart? And so, why? 72. Is cannibalism practised? Do they eat their enemies or their friends? 73. What reasons do they give for the practice? 74. Are there any special ceremonies at cannibal feasts? Are special vessels or implements used at such feasts? 75. Is the use of human flesh confined to any class or sex? 76. What is done with the bones of persons who have been eaten? 77. Do they ever drink the blood of men or animals? Or do they specially avoid the blood? 78. Are there occasions when they avoid even the sight of blood? (e.g.) Are men prohibited at times to see the blood of women, or women to see the blood of men? 79. Do they ever fast? On what occasions, and why? 80. Do they think that by eating the flesh of certain animals or persons they acquire the qualities of the animal or person eaten? (e.g.) That by eating the heart of a lion or of a brave man they become brave; by eating the heart of a hare or a deer they become timid, &c.?

*Hunting and Fishing.*—81. What customs and superstitions have they in connection with hunting and fishing? 82. Do the hunters and fishers prepare themselves for hunting and fishing by any observances or ceremonies? Do they observe any special rules as to eating, speaking, silence, &c., during hunting and fishing? Do they scarify themselves, and why? 83. Do the women and children left at home observe any special rules while the men are out hunting and fishing? 84. Do the hunters and fishers observe any special ceremonies on returning from the chase and from fishing? 85. Are any ceremonies observed for the purpose of appeasing the spirits of the animals and fish which have been killed? What do they do with the bones?

*Agriculture.*—86. Do they till the ground? What customs and superstitions have they in reference to agriculture? 87. Have they ceremonies at sowing, ploughing, and harvest? 88. Have they special rules as to eating the new corn and fruits, and as to the fire used to cook them? 89. Do they sacrifice to obtain good crops? Or to save the crops from blight, hail, &c.? 90. Have they ceremonies for keeping vermin (mice, caterpillars, birds, &c.) from the crops? 91. Have they any superstitions about the first corn cut or the last corn cut? 92. Is any portion of the crop preserved with special ceremonies till the next sowing or the next harvest? What reasons do they give for these customs? 93. Are there any ceremonies practised on the harvest field, such as wrapping up persons in the sheaves, rolling on the ground, &c.? 94. Are there any ceremonies or superstitions about threshing, winnowing, &c.? 95. Are persons engaged in agricultural operations (as sowing, reaping, threshing, gathering the fruits, making oil, &c.), regarded as sacred or tabooed in any way? Have they to observe any special rules during the operations? 96. Mention any superstitious uses of agricultural instruments, as the plough, winnowing basket, sieve, pestle for pounding corn or rice, &c.

*War.*—97. What ceremonies are observed before going to war? 98. Have the warriors on the war-path to observe any special rules as to diet, sleeping, scratching themselves, wetting their feet, touching their heads, &c.? 99. Are the persons left at home bound to observe any special rules as to diet, sleeping, &c., while the warriors are out on the war-path? 100. Do they mutilate their slain enemies? And how, and with what object? 101. What ceremonies are observed on the return of the war party? 102. Is a man who has slain an enemy obliged to perform certain ceremonies or to observe any special regimen before he may associate with his fellows? In particular, are there special rules affecting his eating, drinking, costume, and the vessels and implements which he uses?

*Government.*—103. Have they any form of Government? Are there chiefs? And what is their power? 104. Is the chieftainship elective or hereditary? If hereditary, does it descend to the chief's children, or to his brothers, or to his sister's children, or to whom?

*Oaths and Ordeals.*—105. Have they any ceremonies at the making of friendships, covenants, peace, alliances, &c.? 106. Have they any special forms of oaths or judicial ordeals?

*Salutations.*—107. What are their forms of salutation?

*Arithmetic.*—108. Up to what number can they count? 109. Do they count on fingers and toes, and in a particular order, beginning with a particular finger? 110. Do they use pebbles, sticks, &c., in counting? 111. Do any of their numerals show that they are borrowed from the custom of counting on fingers and toes? (e.g.) Does 'hand' stand for five?; 'hands and feet' or 'man' for twenty? 112. Is any particular number used in the indefinite sense of 'many'?

*Writing.*—113. Do they send messages or make records by any methods like writing, as by notching sticks, carving or painting figures on wood or stone, tying knots in a string, &c.?

*Measurement of Time.*—114. How do they measure time? 115. How do they tell the time of day? 116. Do they reckon by days or by nights? 117. Do they reckon by phases of the moon? 118. How do they determine the year? By seasons? By the growth or ripening of certain plants or fruits? By the number of the moons? By the constellations which rise just before sunrise, or which set just after sunset? By the position of the sun's rising or setting at different times of the year, as indicated by natural landmarks? 119. Have they names for the months, and what do these names mean? 120. If they recognise both the lunar and solar year, how do they harmonize them? 121. Have they observed the solstices and equinoxes, and if so, how? 122. When does their year begin? Have they any ceremonies at the end of the old year and the beginning of the new one? 123. Have they any artificial time-keepers in the nature of sun-dials, water-clocks, pillars for determining the length of the sun's shadow at different times of the year, &c.?

*Games, Dances.*—124. What games and amusements have they?

125. Describe their dances. Are any of their dances imitations of animals? What is the object of such dances? Are their dances ever of the nature of a religious rite?

*Magic and Divination.*—126. Do they practice magic and witchcraft? Describe the methods employed. 127. Are there professional magicians, sorcerers, doctors, medicine-men, or witches among them? Do they inflict and cure disease, bewitch enemies, &c.? Describe their modes of operation. 128. How does a man become a sorcerer, doctor, or medicine-man? 129. Are there rain-makers? How do they procure or avert rain, hail, thunder, and lightning? 130. Do the sorcerers or medicine men ever dress as women? 131. Do the sorcerers or the people generally draw omens from living animals, birds, the entrails of animals, voices, &c.? 132. Have they any other modes of divination, as by the use of lots or dice?

*Religious and Political Associations.*—133. Have they any associations for religious or political purposes? Describe the object of these associations, the mode of admission to them, the ceremonies performed by them, the privileges enjoyed by their members, the badges of membership, &c.

*Men as Women, Women as Men.*—134. Besides the case referred to above (No. 133), are there any other occasions on which men dress as women, and women as men, as at childbirth, marriage, and mourning? Are boys ever dressed as girls, and girls as boys? 134. What reasons do they give for such exchanges of dress?

*Sleep Forbidden.*—136. Are there any times when they are not allowed to sleep, e.g., when sick or wounded, after circumcision, after child-bed, before marriage, &c.?

*Ceremonial Uncleanliness.*—137. Besides the instances already referred to (see Nos. 8, 24, 25, 55, 60, 102), are there any other cases in which persons, things, or places are regarded as ceremonially unclean or impure? Describe the various modes of lustration or purification employed.

*Doctrine of Souls.*—138. Do they think that human beings have souls? What is the nature of the soul? Does it resemble a shadow, a reflection, a breath, or what? 139. Is the soul supposed to depart from the body at death, in disease, sleep, dreams, trance, &c.? 140. Does the soul pass out of the body by the mouth, the nostrils, or how? 141. What is their theory of dreams? Do they believe in the reality and truth of what they see in dreams? 142. When a man is sick because his soul has departed from him, do his friends try to bring back his soul and restore it to his body? 143. Do his enemies try to catch and detain the wandering soul, in order that the man, deprived of his soul, may die? 144. Can a man's soul be extracted or stolen from his body? Can he lose it by accident? 145. Are souls driven away by noises, beating the air with sticks, &c.? Can they be bottled up, let out at holes, &c.? 146. Is the soul of a person who has just died recalled in the hope that it will return and reanimate the body? 147. What becomes of the

Is there a spirit land where the souls of the dead go? Where is this spirit land? How do the souls reach it? 148. Do souls transmigrate into animals, plants, &c.? When a tribe or clan is called after and reveres a certain species of animals or plants (which is the totem of the tribe or clan, see No. 4), are the souls of the members of the tribe or clan supposed at death to transmigrate into the totem animals or plants? 149. Are animals, trees, and plants supposed to have souls? Are they ever treated like human beings, spoken to as intelligent creatures, dressed in human dress, married to men and women, &c.? 150. Are animals and plants thought to possess language of their own? Are any persons supposed to understand the animal or plant language? How do they acquire such knowledge? 151. Are inanimate things, such as weapons, clothes, food, &c., supposed to have souls which are separable from the things, and which exist after the things are destroyed? 152. Are the souls of the dead worshipped with prayer, offerings, &c.?

*Demons and Spirits.*—153. Do they believe in demons and spirits, such as spirits of rivers, lakes, the sea, mountains, winds, clouds, trees, corn, rice, &c.? 154. Do they pray or sacrifice to these spirits? 155. Are the demons or spirits ever driven away from the house, camp, or village? Is there a periodical (e.g. annual) expulsion of demons or spirits?

*Scapegoats.*—156. Do they ever employ anything like a scapegoat?—i.e., do they lade any person, animal, or thing with the disease, misfortunes, and sins of an individual, village, or tribe, and then kill, expel, throw away, or turn adrift the person, animal; or thing so laden, in the hope that the disease, misfortune, or sin will thus be carried away? 157. Do they on certain occasions solemnly kill animals which at other times are sacred and inviolate, e.g., the totem animals? What are these occasions? What ceremonies are observed in killing them? What is done with the skin, flesh, blood, and bones of the animal thus killed? Is it, or any portion of it, eaten by the worshippers? What reasons do they give for these customs?

*Guardian Spirits.*—158. Does each man believe that he has a guardian spirit? 159. Do they think that their life or fortune is bound up with some special object (e.g. an animal, plant, tree, stone, &c.) and that if this object is killed, lost, or destroyed they will die? 160. Are such patron objects acquired at birth, puberty, or when? What ceremonies are observed in choosing them? 161. How does the man treat his patron object in ordinary life and on special occasions, as in sickness, danger, at marriage, &c.? 162. When the patron object is an animal does the man ever dress in the skin, &c., of an animal of that species?

*Resurrection.*—163. Do they believe in any form of resurrection? Under what conditions is it supposed that a dead body may be resuscitated?

*The Heavenly Bodies, &c.*—164. Do they worship or show

respect to the sun, moon, and stars? Have they any at the new moon, sunrise, sunset, the solstices, equinoxes, 165. Have they any myths about the sky, earth, sun, moon, and stars? 166. What do they think becomes of the sun at night? 167. How do they explain the phases of the moon? Also eclipses, thunder, lightning, rainbows, rain, wind, and earthquakes? 168. Have they any myths about animals, plants, the sea, rivers, mountains, clouds, origin of death, &c.? 169. Give as many of their fables, nursery tales, and traditions as you can.

*Sacrifice.*—170. Are sacrifices offered? Of what nature, and to what spirits or gods? 171. Are human beings sacrificed, and on what occasions? Are the victims captives or slaves, or the sacrificers' own children? 172. Are substitutes sometimes employed in sacrifice?—e.g., will a common animal be sacrificed instead of one which is difficult to procure? a part of an animal instead of the whole? an effigy or imitation instead of the real animal or thing? 173. Do persons ever sacrifice parts of themselves, as hair, finger-joints, blood, &c.?

*Miscellaneous Superstitions.*—174. Have they any superstitions about shadows and reflections in the water? 175. About sneezing and yawning? 176. About stepping over persons or things? 177. About keeping silence at certain times? 178. About the use of the right or left hand or foot? 179. About footprints or the impress of their body in sand, on grass, &c.? 180. About numbers? 181. About animals and plants? 182. About cutting hair or nails? 183. About excrement? 184. About spittle? 185. About names? Do they object to tell their own names? or to mention the names of any of their relations, of chiefs, the dead, &c.? 186. Are the names of persons changed at different epochs of life, on various occasions, as during sickness or after a death? Are the names of common objects ever changed? What reasons do they give for these customs? 187. Describe any other curious customs or superstitions which you may have observed.

### *Supplementary Questions.*

*Pastoral Life.*—188. Do they keep cattle? and what kind of cattle? Does every one keep cattle, or only the chiefs? 189. Do they live on the flesh of their cattle or on the milk, or on both? Are cattle killed regularly for food, or only on special occasions? What are these special occasions? If they object to killing their cattle for food, have they any objection to killing and eating game? 190. How are the cattle killed? Is there one way of killing them when they are to be sacrificed, and another when they are to be eaten? 191. Is the killing of a head of cattle always or generally the occasion of a feast? Have other persons besides the owner of the cattle a right to share in such a feast? 192. Are the cattle regarded as sacred in any way? What marks of respect are paid to them? 193. Are the cattle milked and tended by men or by women? if by men, are the women rigorously forbidden to enter

the cattle-yards and to meddle with the cattle? 194. Is any special sanctity attached to the dairy, and to the dairyman or dairy-woman? Has he or she to undergo any special training for the office? or to perform any ceremonies before or after milking the cattle? 195. Are there any superstitious customs or beliefs about milk? Are any persons, in any circumstances (*e.g.* when wounded), forbidden to drink it? Is it forbidden to boil the milk? and why? 196. Is drinking milk together a bond of union between the persons drinking? Does it constitute a bar to marriage between a man and a woman? 197. Is any special use made of the dung and urine of the cattle in religious or other ceremonies? are they used as a means of purifying the person, house, utensils, &c.? 198. Is any sanctity ascribed to the grass, or in general to the fodder of the cattle? Is it used in ceremonial or religious rites? 199. Are the cattle ornamented in any way? are their horns twisted into special shapes?

*Agriculture.*—200. Are there any ceremonies or superstitions at clearing land for cultivation? at cutting down trees? 201. Any superstitious customs at digging wells or bringing water for irrigation? 202. How are the lands distributed for purpose of cultivation? has each man his own field, or are the fields owned and tilled by all the people in common? is there a periodical redistribution of land? 203. Are the same fields tilled year after year, or are they allowed to lie fallow for some years after cultivation? 204. If the cultivation shifts periodically from one district to another, is the site of the village shifted with it? or does the village remain permanent? 205. Does each man enjoy the produce of his field? or is the produce of all the fields thrown together, and then divided amongst all the people? 206. Is the beginning of the New Year determined by agricultural operations, as harvest or sowing? Is there a period of general license and lawlessness at the New Year or at any other time?

*Miscellaneous.*—207. Any superstitions about the birth of twins? 208. Any peculiar ceremonies at the reception of strangers, especially foreigners or people of a different tribe? 209. Any superstitious customs at building or occupying a new house? 210. Have the natives any kind of money, or anything that passes as money, such as cattle, cowries, salt, &c.? 211. How is the succession to the chieftainship or kingdom determined? What ceremonies are observed at the election or inauguration of chiefs and kings? 212. Is the daily life of the king or chief regulated by special rules? Has he to perform any sacred or priestly duties? Describe all such rules and duties. 213. How are priests elected? What rules of life have they to observe?

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RACE and LANGUAGE.

In an article in the "Nineteenth Century," of January, 1889, by the Duke of Argyll, styled "Isolation, or the Survival of the Unfittest," the following remarks incidentally occur of great

interest to anthropologists as an illustration of the extremely nature of the connection between race and language in the British Isles. After stating that the long and wide prevalence of the Celtic population, even in the east of Scotland, is shown by an equally broad distribution of Gaelic place-names, the author adds:—"It is, moreover, curiously illustrated by the circumstances mentioned in 'Burt's Letters,' that in Edinburgh, so late as about 1730-35, it was difficult to get domestic servants from Fifeshire, who could speak English."

This statement will seem the more remarkable to those who remember how very gradually the English language superseded the Celtic in south-western Britain. For, as Canon Isaac Taylor remarks ("Words and Places"), in the Will of King Alfred, Dorset, Somerset, Wilts, and Devon, are all enumerated as "Wealhcyne," or counties Celtic both in blood and language. In remote parts of Devon, Celtic was spoken here and there till the reign of Elizabeth. And in Cornwall, it has been absolutely extinct only about a century, "though in 1701," Mr. Tregellas remarks, "Llhnnyd writes that every Cornish man could then speak English, and that Cornish was then spoken only in a few villages in the Land's End district." On turning to Canon Taylor's Map of the British Isles, illustrating the distribution of Celtic, Saxon, and Scandinavian place-names, we find that Cornwall, though it possessed fewer speakers of a Celtic tongue 150 years ago than Fifeshire, has very few Saxon place-names, while Fifeshire shows about as many as Devon and Somerset. But for the fact mentioned in "Burt's Letters," it would, naturally, have been supposed that Fifeshire must have been one of the earliest of the English-speaking counties of Scotland, being probably second in that respect only to Berwickshire and the Lothians. It seems difficult to account for the very great difference between the very slow and gradual diffusion of the English tongue westward in south-western Britain, and the retention of a Celtic language in Fifeshire a century and a half ago to a much greater degree than in Cornwall at the same date—the position of Fife, as regards the capital and the eastern coast, being analogous to that of Essex. Probably, in the time of George II, the trade of Fife with the counties south of the Firth was but small, and that with the Highlands to the westward much more considerable. While since that period the growth of commerce and wealth has made the Firth a channel of intercourse rather than a means of separation, and has thus caused a much more rapid diffusion of the language of the capital. For as regards race, an immigration of Highlanders into fertile Fife, is much more likely to have taken place since the time of George II, than the emigration of the Celtic speakers of Fifeshire, to other districts.

T. V. HOLMES.

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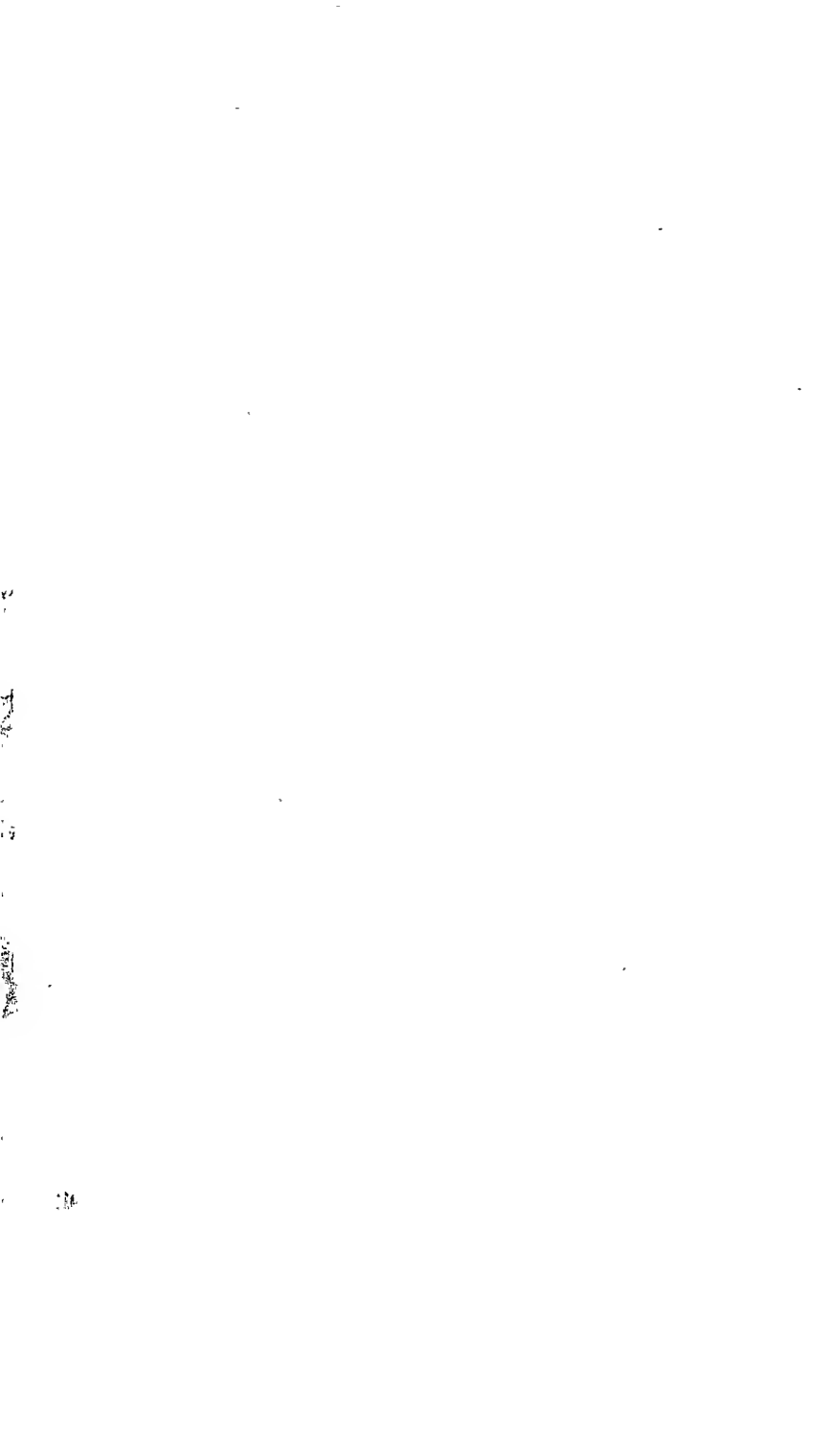
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